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FOOD ENGINEERING

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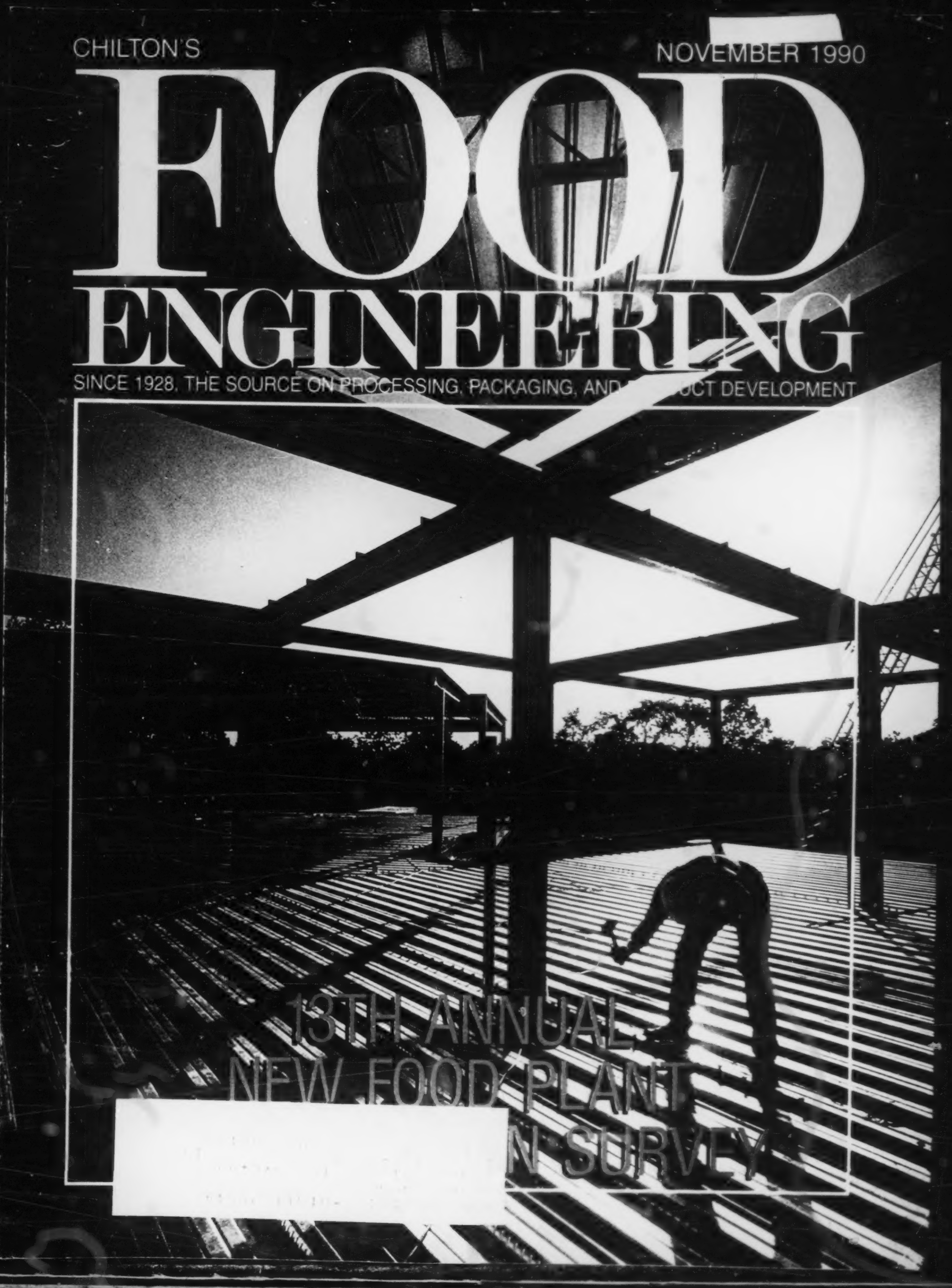

13TH ANNUAL
NEW FOOD PLANT
N SURVEY

FOOD ENGINEERING

ABOUT THE COVER

New plant construction is on the upswing, according to *Food Engineering's* annual survey. A record-breaking 456 projects were reported under construction, up from 390 last year.
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JESSE H. NEAL
AWARD-WINNING
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INDUSTRY REPORT

Ready-to-eat pudding makes a splash

Ready-to-eat (RTE) refrigerated puddings have become the fastest growing segment in the pudding and gelatin desserts market, growing 33.8 percent in 1990, according to Find/SVP, New York. Retail sales of RTE refrigerated pudding are expected to reach $443 million by 1995.

Although refrigerated RTE is presently the smallest part of the $928 million pudding and gelatin market, its growth is the most dynamic stemming from consumers' desire for convenience. Favorable health and taste perceptions and successful marketing of refrigerated foods explain the category's phenomenal success, according to Find/SVP. For further information, contact Find/SVP at (212) 645-4500.

Category	Sales ($M)	% increase from 1989
Refrigerated RTE	$285	+ 33.8%
Shelf stable RTE/ Dry pudding mixes	$372	+ 1.9%
Dry gelatin mixes	$271	+ 4.8%

Source: Find/SVP.

Tariffs to cost U.S. farmers $billions

New tariffs on U.S. farm products being proposed by the European Community could cost American farmers almost $20 billion between 1991 and 1995, according to a study released by the Corn Refiners Association, Inc. (CRA), the National Corn Growers Association and the U.S. Feed Grains Council.

The study, conducted by Hill and Knowlton, Inc., also found that these tariffs could **raise U.S. farm program costs by over $4 billion** during the same period. The EC's proposals would eliminate the nearly six million ton export market for U.S. corn gluten feed and greatly increase competition for corn, soybean and wheat feeds in the U.S. market. This would drive down domestic corn prices.

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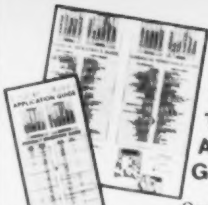

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13th Annual New Food Plant Construction Survey

Food plant construction/renovation shows phenomenal growth in the face of a slowing economy.

PATRICIA M. DILLON
SENIOR ASSOCIATE EDITOR

For the sixth consecutive year, *Food Engineering's* annual new plant survey shows whopping growth with a record 456 projects under construction, up from 390 reported last year. Approximately 48 percent of the total is comprised of new construction, slightly down from last year, which may indicate the beginnings of a trend toward renovations taking precedence over new construction (as forecast by Food Plants '90). Results were compiled from a *FE* survey and data provided by Conway Data, Inc., Norcross, GA.

Budgets for individual plants have been trimmed from the glory days of the '80s with no plants approaching a billion dollars, such as Kellogg's now scrapped billion dollar Memphis plant. However, Borden continues with its ambitious hyperplant strategy with five new plants planned in this survey.

Other interesting developments include the upsurge of manufacturing facilities planned by Japanese food companies, such as the $65-million plant for Nippon Suisan Kaisha in Dutch Harbor, AK and the manufac-

ture of tofu in Terre Haute, IN planned by Kyoto Foods.

Another noteworthy trend is the continued construction of catfish processing and feed facilities.

In the final column of the following tables, project status and dates are coded as follows: Plng. (site selected but construction not yet underway); Const. (construction underway); and Stup. (actual or projected startup dates of new manufacturing plants).

Webber/Smith Associates, Inc. has designed a $31-million plant for Bama Foods, baker of McDonald's fruit pies.

[redacted]

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employees	Architects/ Engineers	Status & Date
			A					
A.E. Staley Manufacturing Co.	Loudon, TN	Corn syrup	Exp.	–	1.90	–	–	Plng.
A.L. Schutzmann	Milwaukee, WI	Salted nuts, snack foods	New	50	3.00	34	–	Stup. 12/90
ABC Farms	Adel, GA	Pckg. vegetables	New	45	–	160	–	Comp.
Adolph Coors	Elkton, VA	Beer packaging	Exp.	–	5.50	–	–	Stup. 4/90
Alabama Feed Products, Inc.	Hanceville, AL	–	Exp.	–	6.50	12	–	–
Albertson's, Inc.	Brea, CA	Warehouses	Renov.	101.1	–	–	A. Epstein & Sons Int'l.	Comp.
Albertson's, Inc.	Roseville, CA	Meat & deli warehouse	New	270	19	40	A. Epstein & Sons Int'l.	Comp.
Albertson's, Inc.	Roseville, CA	Meat & deli warehouses	Exp.	51.9	19	40	A. Epstein & Sons Int'l.	Comp.
Albertson's, Inc.	Fort Worth, TX	Dist. ctr.	New	730	30	55	A. Epstein & Sons Int'l.	Comp.
Algodon	Arboga, CA	Prunes, walnuts	Exp.	32	–	52	–	Plng.
Allen Canning Co.	Siloam Springs, AR	Canned vegetables	Exp.	–	2.00	55	–	Comp.
Amalgamated Sugar	Twin Falls, ID	Molasses	Exp.	–	2.20	12	–	Stup. 3/90

NEW FOOD PLANTS

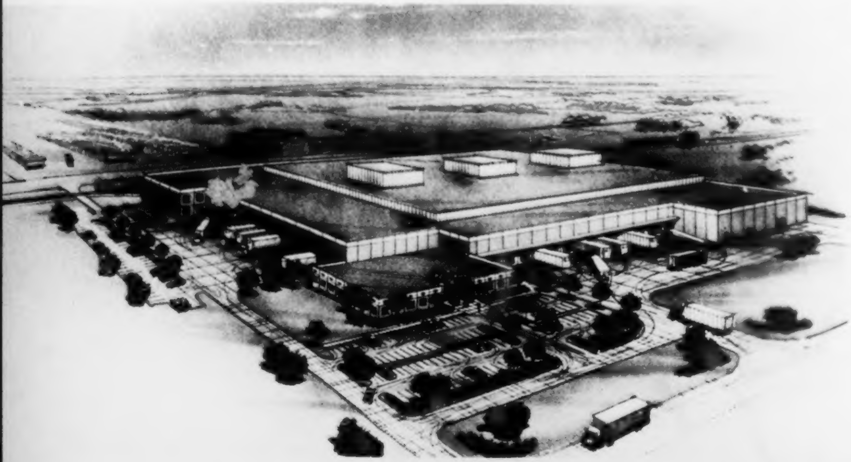
Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employ-ees	Architects/ Engineers	Status & Date
Ambrosia Chocolate	Milwaukee, WI	Bulk chocolate	New	320	75.00	356	Lockwood Greene Davy McKee	Stup.3/92
American Classic Confections	Byhalia, MS	Desserts	New	100	1.40	150	–	Const.
American Dehydrated Foods	Troy, NC	Pet food	New	–	7.00	–	–	Plng.
American Foods	Dallas, TX	Frozen yogurt mix	Exp.	80	–	45	–	Plng.
American Ingredients Co.	Grandview, MO	Distribution ctr.	New	64	–	–	–	Plng.
American Italian Pasta Co.	Excelsior Springs, MO	Pasta	Exp.	–	15.00	70	–	Const.
Americold	Tomah, WI	Refrig. warehouse	New	110	–	–	Stellar Group	–
Amstar Sugar	Arabi, LA	Sugar	New	–	7.50	–	–	Const.
Anheuser-Busch	Baldwinsville, NY	–	Exp.	20	–	–	–	Plng.
Anheuser-Busch	Cartersville, GA	Beer	New	860	250	500	MK-Ferguson	Const. 3/92
Anheuser-Busch	St. Louis, MO	Beer	Exp.	–	259	–	MK-Ferguson	Const.
Anheuser-Busch	Tampa, FL	Beer	Exp.	47	45	49	Lockwood Greene	–
Anheuser-Busch	Williamsburg, VA	Beer	Exp.	22	–	–	–	Plng.
Aquaculture Technologies	Palmetto, LA	Cat fish	New	–	5.00	200	–	Comp.
Aquaculture Technologies Ltd.	Lebeau, LA	Finfish	New	–	10.00	–	–	Comp.
ARKAT	Dumas, AR	Catfish feed	New	–	3.40	51	–	–
Ardmore Farms	Deland, FL	Juice proc./pckg.	Exp.	10	1.50	10	–	Plng.
Ariake	Harrisonburg, VA	Meat flavoring	New	30	10.00	–	–	Plng.
ASK Foods	Palmyra, PA	Salads/frozen soups	New	–	2.20	60	–	Stup. 11/89
Associated Grocers	Miami, FL	Wlsle. grocer	Exp.	80	–	–	Stellar Group	–
Associated Milk Producers	Roswell, NM	Cheese	New	110	24.00	80	–	Plng.'91
Atlanta Dairy	Georgia	Milk	Exp.	–	–	–	Hixson	Stup.'90

B

Bagel Bites Division	Ft. Myers, FL	Pizza bagels	Exp.	25	1.00	50	–	Plng.
Bakeline, Inc.	Des Plaines, IL	Warehouse	Exp.	115	5	–	A. Epstein & Sons Int'l.	Comp.
Bama Foods	Tulsa, OK	Baked goods	New	135	31.00	135	Webber/Smith Lockwood Greene	Comp. 7/91
Barber's Dairies	Birmingham, AL	Milk	Exp.	40	–	–	Webber/Smith	Stup. 3/91
Basic Food Flavors	N. Las Vegas, NV	Flavoring	New	21	–	25	–	Plng.
Beech-Nut Nutrition Corp.	St. Louis, MO	Corp. HQ	New	–	–	50	–	Plng.
Bellingham Baking Co.	Bellingham, WA	Muffins/cookies	New	22	2.00	12	–	Plng.
Best Foods	Chicago, IL	Oil & syrup	Renov.	–	–	–	Fluor Daniel	Const.
Big Bear	Wapakoneta, OH	Groc. dist.	New	500	–	–	Hixson	–
Big Bear	Columbus, OH	Frozen food	New	75	–	–	Hixson	Stup.'91
Big Stone Cheese Factory	Big Stone City, SD	Italian cheese	Exp.	–	1.40	–	–	Comp.
Black Forest Bakery	Phoenix, AZ	Bakery	New	28	–	60	–	Plng.
Blue Bell Cranberries	Baton Rouge, LA	Cold storage	New	–	1.00	40	–	Comp.
Blue Bell Creameries	Broken Arrow, OK	Ice cream	New	–	–	–	–	Stup. 3/90
Blue Ridge Farms	Brooklyn, NY	Foods	Exp.	30	–	–	–	Const.
Boom-Co.	Alden, IA	Egg processing	New	–	6.70	66	–	Plng.
Booth Fisheries	Orlando, FL	Sea food dist.	Renov.	–	–	–	Setter, Leach & Lindstrom	Comp.
Borden	St. Louis, MO	Pasta hyperplant	New	–	50.00	200	–	Comp.'92
Borden	St. Louis, MO	Foodservice	New	–	20.00	400	–	Comp. 7/91
Borden	Jackson, MS	Proc. pckg. food	New	–	20.00	–	–	Plng.
Borden	Texas	Milk	Exp.	12	–	–	Hixson	–

NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employ-ees	Architects/ Engineers	Status & Date
Borden	Cape May, NJ	Seafood	New	58	15	–	Hixson	–
Borden	Chambersburg, PA	Foodservice prod.	New	400	25	–	Ruscilli Const. Jacobs Engr.	Comp.'91
Boyd Coffee Co.	Gresham, OR	Coffee (instit.)	Exp.	85	–	–	–	Plng.
Breese Bleu	Watertown, WI	Cheese	Addition	12	–	–	Mead & Hunt	Const.
Brewster Dairy	Canton, OH	Swiss cheese	Exp.	14	4.50	–	–	Const.
Briess Industries	Chilton, WI	Grain proc.	New	–	–	–	T.E. Ibberson	–
Brothers Baking Co.	Ontwa Twp., MI	–	New	–	1.10	25	–	–
Brown Foreman Corp.	Louisville, KY	Fish processing	New	–	4.00	–	–	Plng.
Bruno's, Inc.	Birmingham, AL	Dist. ctr.	Exp.	365	–	–	Food Plant Engineering	Stup. 3/91
Buffalo Rock Co.	Birmingham, AL	–	Exp.	–	4.00	50	–	–
Bumble Bee Seafoods	Santa Fe Springs, CA	Tuna cannery	New	122	–	200	–	–
Bunge Corp.	Saint Louis, MO	Grain processing	New	–	–	100	–	Plng.
Byerly Foods Int'l.	Lake Mills, IA	Frozen foods	Exp.	30	–	–	–	Const.
C								
Calumet Diversified Meats	Pleasant Prairie, WI	Meat processing	New	33	2.20	90	–	Comp.
Campbell Soup Co.	Fayetteville, AR	Poultry	Exp.	–	6.50	50	–	–
Campbell Soup Co.	Paris, TX	Soup	Exp.	225	–	75	–	Const.
Campbell Soup Co.	Camden, NJ	Soup	Exp.	90	24.00	–	MK-Ferguson Sigel Group & Ballinger	Stup. 3/91
Campbell Soup Co.	Maxton, NC	Soup	Exp.	500	–	220	–	Stup. 9/90
Campbell Soup Co.	Paris, TX	Soup, Prego, V-8 juice	Exp.	250	–	50	–	Const. 9/90
Canbra Foods	Butte, MT	Canola oil	New	230	15.00	60	–	Stup. 9/90
Cargill	Stockton, CA	Flour	New	–	16.00	30	–	Plng.'91
Cargill	Buena Vista, CA	Chicken proc.	Exp.	–	–	400	–	–
Cargill	Fort Morgan, CO	Beef slaughter	Exp.	–	24	200 +	–	Comp.'92
Cargill	Dawson, GA	Chicken proc.	Exp.	–	–	50	–	–
Cargill/Nutrena Feeds	Kissimmee, FL	Animal feed	New	30	–	–	–	Comp.
Cargill/Nutrena Feeds	Kissimmee, FL	Animal feed	Exp.	400	6.00	40	–	Const.
Cargill	Memphis, TN	Oil	New	–	–	15	–	Comp.'91
Cargill	Schuyler, NE	Beef slaughter	Exp.	–	–	–	–	Comp.'91



The Stellar Group designed the refrigerated distribution center for the International Cargo Network in LaPorte, TX.

NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employees	Architects/ Engineers	Status & Date
Cargill	Dodge City, KS	Beef slaughter	Exp.	–	–	–	–	Comp.'91
Carriage House Foods	San Jose, CA	Tomato sauce	Exp.	–	–	–	Fluor Daniel	Comp. 4/90
Carriage House Foods	San Jose, CA	Peanut butter	Renov.	–	–	–	Fluor Daniel	Stup. 3/90
Carnation Co.	Modesto, CA	Evaporated milk	New	125	–	60	–	Stup. 9/91
Case-Swayne Co.	Santa Ana, CA	Tomato proc.	New	–	1	100	–	Comp.
Chattanooga Brewing Co.	Chattanooga, TN	Beer	New	–	3.00	15	–	–
Christiana Frank M.	Marrero, LA	–	New	–	1.40	50	–	Plng.
Coca-Cola	Robertsdale, AL	–	Exp.	–	1.00	4	–	–
Coca-Cola	Tualatin, OR	Soft drinks	New	51	1.70	–	–	Plng.
Coca-Cola Bottling	Hauppauge, NY	–	Exp.	237	–	–	–	Plng.
Coca-Cola	Sacramento, CA	Dist. ctr.	New	303	–	–	Food Plant Engineering	Stup. 11/91
Coca-Cola	Tucson, AZ	Soft drinks	New	180	5.00	–	–	Plng.
Coca-Cola	Central Florida	Juice concen.	Exp.	32	–	–	Webber/Smith	Stup. 12/91
Colonial Sugar	Gramercy, LA	Sugar storage	Exp.	–	20.00	–	–	Plng.'92
ConAgra	Marshall, MO	Frozen foods	Exp.	–	–	100	–	Plng.
ConAgra Broiler Co.	Arcadia, LA	Poultry	Exp.	–	5.00	100	–	Stup. 5/90
ConAgra Frozen Foods	Batesville, AR	Poultry	Exp.	–	3.00	–	–	Comp.
ConAgra Poultry Co.	El Dorado, AR	Poultry	Exp.	–	1.40	–	–	Comp.
ConAgra Poultry Processing	Enterprise, AL	Poultry	Exp.	–	3.80	100	–	Plng.
ConAgra Specialty Grain Products	S. Sioux City, NE	Oats	Exp.	–	4.00	–	–	Stup. 5/90
ConAgra, Inc.	Athens, AL	–	Exp.	–	–	75	–	–
ConAgra Frozen Foods	Milan, MO	Turkey/chicken	Exp.	–	–	150	–	Plng.
ConAgra Poultry	Arcadia, LA	Chicken	Exp.	–	2.20	100	–	Comp.
Consolidated Biscuit Co.	Pike County, KY	Baked goods	New	–	–	500	–	Stup. 5/90
Continental Freezers	Chicago, IL	Frz. food dist.	Exp.	86	–	–	Webber/Smith	Stup. 9/90
Copeland Enterprises	Metairie, LA	–	Exp.	–	1.30	–	–	Plng.
Corn Products	Chicago, IL	Milling & Refin.	Renov./Exp.	–	–	–	Fluor Daniel	Const.
Cornnuts	Fresno, CA	Snack foods	Exp.	60	12.00	–	–	Comp.
Cossack Caviar	Arlington, WA	Caviar & ba	New	56	–	–	–	Stup. 9/90
Crawford Sales Co.	Olathe, KS	Beer dist.	Exp.	63	–	–	–	Const.
Crescent Mills	Hopkinsville, KY	Grain mill	New	25	–	–	–	–
Culinary Brands	Stockton, CA	Vacuum-packed foods	New	43	5	70	Austin Co.	Comp.
Culligan Water Conditioner	Olathe, KS	Bottled water	Exp.	–	1.60	14	–	–
Culligan-Olathe	Olathe, KS	Bottled water	Exp.	–	–	90	–	Const.
D								
Dairymen's Creamery Coop.	Boise, ID	Ice cream	New	20	–	–	Mead & Hunt	Stup. 12/89
Dakota Pork Inds.	Huron, SD	Pork	Exp.	–	7.80	116	--	Comp.
Dawn Produce Co.	Chattanooga, TN	Poultry	Exp.	–	–	75	–	Plng.
Diamond Country Food	Murfreesboro, AR	Poultry	Exp.	–	–	269	–	Comp.
Diamond Fruit	Hood River, OR	–	Exp.	–	1.00	29	–	–
Doane Products	Ocala, FL	Pet food	New	75	2.00	25	–	Plng.
Doane Products	Temple, TX	Pet food	Exp.	20	–	–	–	Const.
Doane Products	Tomah, WI	Pet food	New	50	–	45	–	Plng.
E								
Ellison Meats Co.	Pipestone, MN	Meat	New	45	4.50	150	–	Plng.

NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employ-ees	Architects/ Engineers	Status & Date
Ergon Inds.	Norman, OK	Hydropronically grown sprouts	New	70	25.00	–	Stubblefield	Plng.
Everything Yogurt	Staten Island, NY	Dairy prod.	New	20	–	–	–	Stup. 12/89
Excel Corp.	Fort Morgan, CO	Beef	Exp.	–	10.00	–	–	Comp.
Excel Foods	Rock Port, MO	Meat	Exp.	–	–	150	–	Plng.
F								
Fairbank Farms	Ashville, NY	–	New	100	–	270	–	Const.
Fairfield Farms	Hanover, MD	Froz. soups	New	80	11	–	Webber/Smith	Stup. 6/91
Faribault Foods	Faribault, MN	Food prod.	Exp.	37	–	–	–	Stup. 7/90
Farley Candy Co.	Melrose Park, IL	Candy	Exp.	–	4.10	300	–	Plng.
Farmer Feed	Dumas, AR	Catfish feed	Exp.	–	3.40	51	–	–
Farmland Foods	Wichita, KS	Meat	Exp.	–	–	200	–	Const.
Farmland Foods	Crete, NE	–	Exp.	–	13.70	110	–	Comp.
Feed Commodities	Stockton, CA	Livestock feed	New	25	–	–	–	Plng.
Fleischmanns Yeast	Memphis, TN	Bakers yeast	New	60	–	–	–	Comp.
Floppies	Eudora, AR	Catfish	New	–	2.50	150	–	–
Flowers Bakery	Manatee Cnty, FL	Baked goods	Exp.	95	20.00	250	–	Const.
Flowers Bakery	Baton Rouge, LA	Baked goods	Exp.	–	–	50	–	Comp.
Flying Food Fare	Olympia, WA	Airline meals	New	–	–	75	–	Plng.
Folger Coffee Co.	Sherman, TX	Coffee	Exp.	–	10.00	75	Fru-Con Eng.	Const.
Foremost Dairies	–	Dairy proc.	New	–	30.00	–	–	Stup.'91
Four State Corn Processors	Red Oak, IA	Tortilla chips	New	79	–	–	–	Comp.
Fox River Foods	Montgomery, IL	Food prod.	Exp.	–	2.10	80	–	Plng.
Freeze Pt. Cold Storage	Manteno, IL	Refrig. warehouse	Exp.	50	–	–	Stellar Group	–
Freezer Queen Foods	Buffalo, NY	Frozen foods	Exp.	–	3.50	35	–	Plng.
Fresh Frozen Foods	Jefferson, GA	Frozen foods	Exp.	–	–	70	–	–
Fries & Fries	Cincinnati, OH	Flavors	New	–	7.00	–	–	Comp.
Frito-Lay	Memphis, TN	Food prod.	Exp.	10	1.00	10	–	Const.
Frito-Lay	Batavia, IL	Food prod.	New	120	–	–	–	Const.
Frito-Lay	Modesto, CA	Potato chip	New	165	–	–	Fluor Daniel	Comp. 6/90
Frito-Lay	Cucamonga, CA	Salted snacks	Line add.	–	–	–	Hixson	–
Frito-Lay	Frankfurt, IN	Salted snacks	Line add.	–	–	–	Hixson	–
Frito-Lay	Louisville, KY	Salted snacks	Line add.	–	–	–	Hixson	–
Fuji Vegetable Oil	Savannah, GA	Vegetable oil	New	–	10.00	40	–	Comp.
Fujin Oil	Savannah, GA	Veg./palm oils	New	–	5.00	40		Plng.
G								
G.F.I. America	Rapid City, SD	Ag. proc.	Exp.	–	10.00	250	–	Comp.
Gala Food Pkg. Co.	Battle Creek, MI	Sugar proc.	New	–	1.00	–	–	Comp.
General Foods	Tulare, CA	Food prod.	New	32	–	–	–	Plng.
General Foods	Jonesboro, Ark.	RTE cereal	New	230	–	–	A. Epstein & Sons Int'l.	Comp.
General Mills	Cedar Rapids, IA	Cereal	Exp.	–	20.00	40	–	Const.
General Mills	Albuquerque, NM	Cereal	New	–	110.0	–	CRSS	Plng.
General Mills	Covington, GA	RTE cereal	New	200	100	110	Lockwood Greene	–
Geoffrey Boehm Chocolates	Allegheny Cnty., PA	Candy	Exp.	–	1.20	–	–	Plng.
Gerber Foods	Fremont, MI	Baby food	Exp.	100	–	–	–	Comp.
Gerber Products	Fort Smith, AR	Baby food	Exp.	–	6.00	–	–	Comp.

NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employ-ees	Architects/ Engineers	Status & Date
Godfather's Pizza	Omaha, NE	–	Exp.	–	3.70	42	–	Comp.
Gold Kist	Crossville, AL	Chicken	New	30	2.10	70	–	Const.
Gold Kist	Valdosta, GA	Pet food	New	–	–	50	–	Plng.
Gold Kist	Jasper, AL	Poultry feed	Exp.	255	–	–	Younglove	Plng.
Gold Kist, Inc.	Boaz, AL	–	Exp.	–	6.50	200	–	–
Gold Kist, Inc.	Trussville, AL	–	Exp.	–	2.50	80	–	–
Golden Poultry	Cherokee, AL	Poultry feed	New	–	–	–	Younglove	–
Graham & Rollins	Newport News, VA	Crabmeat	Exp.	–	–	150	–	Plng.
Grain Processing Corp.	Muscatine, IA	Corn milling	Exp.	–	–	–	–	–
Granada Corp.	Houston, TX	Food proc.	New	–	3.00	–	–	–
GranPac Foods	Rivergate, OR	Food proc.	New	100	14.00	–	–	Stup. 9/91
Great Lakes Cheese	Plymouth, WI	Packaged cheese	New	–	9.00	50	–	Const.
Great Lakes Mushroom Co-op	Imlay City, MI	Mushrooms	New	30	1.00	80	–	Const.
Green Foods Corp.	Oxnard, CA	Health foods	New	80	20.00	50	–	Plng.
Griffin Food Co.	Muskogee, OK	Syrup, food prod.	New	–	12.00	–	–	Plng.
Grindsted Brands, Inc.	Olathe, KS	Additives	Exp.	75	25	–	Austin Co.	–
Grist Mill Co.	Hopkinsville, KY	Food proc.	New	–	3.00	110	–	Plng.
H								
Hakes Foods	Laurens, IA	Foods	Exp.	75	–	–	–	–
Harvestime Foods	Ayden, NC	Frozen pastry dough	Exp.	22	–	10	–	Comp.
Harvin Choice Meats	Sumter, SC	Meat/sausage	Exp.	20	1.0	–	Hendon-Lurie	Const.
Heinz Pet Products	Newport, KY	Pet food	New	–	–	300	–	Const.
Helikrone	Dade Cnty., FL	Food Proc./dist.	Exp.	44	2.50	–	–	Plng.
Hermiston Foods	Hermiston, OR	Food proc.	New	123	9.00	–	–	Plng.
Hershey Foods	Derry Township, PA	Chocolate	New	130	100.00	60	Sverdrup Ballinger	Const.'91
Hershey Foods	Derry Township, PA	Chocolate	New	–	39.00	–	Sverdrup	Const.'91
Hiland Potato Chips Co.	Des Moines, IA	Potato chips	Exp.	–	3.60	38	–	Plng.
Hills Bros. Coffee	New Orleans, LA	Coffee	Exp.	–	3.50	20	–	–
Hills Brothers Coffee	Suffolk, VA	Coffee	Exp.	240	6.00	100	–	Comp.
Hills Pet Products	Richmond, IN	Pet food	New	204	66.00	250	A. Epstein & Sons Int'l.	Comp.
Hilmar Cheese Co.	Hilmar, CA	Cheese	Exp.	27	6.00	–	Mead & Hunt	Const.
Hiram Walker & Sons	Fort Smith, AR	Alcoholic bev.	Exp.	–	5.00	–	–	Comp.
Holly Farms Corp.	Hanover Cnty., VA	Poultry proc.	Exp.	–	–	120	–	Plng.
Holly Farms	Temperanceville, VA	Chicken	Exp.	–	1.00	–	–	Plng.
Holly Sugar Corp.	Hereford, TX	Sugar refinery	New	–	12	–	–	Stup. 9/90
House of Bricks Realty	Pennsylvania	Specialty meats	New	–	1.00	–	–	Plng.
Hudson Foods	Berlin, MD	Poultry	Exp.	15	5.10	110	–	Const.
Hunt-Wesson	Charlotte, NC	Food prod.	New	185	5.00	–	Hepler Hale	Plng.
HVR Co.	Reno, NV	Salad dressing	New	147	36	–	Fluor Daniel	Comp.
Hy-Vee Food Stores	Cherokee, IA	Grocery warehouse	Exp.	230	6.50	–	Food Plant Engineering	Stup. 4/91
I								
Iams Co.	Nashville, NC	Pet food	New	150	–	70	–	Plng.
Iams Co.	Henderson, NC	Pet food	New	210	30.00	70	–	Plng.
IBP	Lexington, NE	Beef slaughterhouse	New	–	–	600	–	Const.
Imperial Foods	Cumming, GA	Chicken	Exp.	–	–	100	–	–
Indian River Foods	Fort Pierce, FL	Citric juices	Exp.	250	5.50	200	–	Plng.

NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employ-ees	Architects/ Engineers	Status & Date
Ingomar Packing Plant	Volta, CA	Tomato proc.	New	–	20.00	–	–	–
Innovative Pork Concepts	Delphi, IN	Hog proc.	New	50	-	500	–	Plng.
Int'l. Cargo Network	Jacintoport, TX	Refrig. dist. ctr.	–	240	–	–	Stellar Group	–
Int'l. Cargo Network	Barbours Cut, TX	Refrig. dist. ctr.	New	150	–	–	Stellar Group	–
Int'l. Cargo Network	LaPorte, TX	Refrig. dist. ctr.	New	147.5	–	–	Stellar Group	–
Int'l Multifoods	Motley, MN	Surimi	Exp.	–	11.40	120	–	–
Interstate Warehousing	Joliet, IL	Dist. ctr.	Exp.	2.0	–	–	Tippmann	–
Interbake Foods	N. Sioux City, SD	Cookies	Exp.	–	1.20	–	–	Comp.
Iowa Beef Processors	Perry, IA	Meat storage	New	32	–	–	–	Plng.
Ito-En Co. Ltd.	Honolulu, HI	Tea	New	–	19.60	–	–	Comp.

J

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employ-ees	Architects/ Engineers	Status & Date
J.E. Parker	Richmond, IN	Chicken	New	–	1.20	60	–	Plng.
J.R. Simplot Co.	Quincy, WA	Frozen veg.	New	160	–	475	–	Plng.
Jim Dandy Co., Inc.	Decatur, AL	–	Exp.	–	2.50	–	–	–

K

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employ-ees	Architects/ Engineers	Status & Date
Kagome Co. Ltd.	Los Banos, CA	Fruit bev.	New	–	16.00	–	–	Comp.
Kansas City Salad	Kansas City, KS	Produce	New	–	–	75	–	Const.
Karlshamns, USA	Columbus, OH	Oil	New	55	–	–	PSI Group	Stup. 6/91
Katokichi Co. Ltd.	Honolulu, HI	Frozen foods	New	–	15.80	–	–	Plng.
Keebler Co.	Jerome, ID	–	New	32	1.50	10	–	Const.
Keebler Co.	Denver, CO	Baked goods	Exp.	46	6	–	A. Epstein & Sons Int'l.	Comp.
Kehe Foods	Romeoville, IL	Warehouse	New	300	–	–	–	Const.
Kelley Foods of Alabama	Elba, AL	–	Exp.	–	1.40	20	–	–
Kellogg	Battle Creek, MI	RTE cereal	Exp.	–	–	–	Fluor Daniel	Const.
Kesterson Food Co.	Paris, TN	Meat proc.	Exp.	–	–	103	–	Plng.
Kraft	Lawrenceburg, KY	Cheese	Exp.	–	1.20	–	–	Plng.
Kraft	Springfield, MO	Cheese	Exp.	–	1.50	–	–	Plng.
Kraft	Phoenix, AZ	Dist.	New	175	–	125	–	Plng.
Kraft General Foods	Evanston, IL	Food prod.	New	20	–	–	–	Plng.
Kraft	N. Lawrence, NY	Cultured prod.	Exp.	–	–	–	Hixson	–
Kraft	Walton, NY	Cottage cheese	Exp.	10	–	–	Webber/Smith	Stup. 11/90
Krueger Pepper Gardens	Yakima, WA	Produce proc.	New	24	–	–	–	Plng.
Kyoto Food Corp.	Terre Haute, IN	Tofu	New	–	4.50	–	–	Const.

L

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employ-ees	Architects/ Engineers	Status & Date
Lakeside Dairy Co.	Sioux Falls, SD	Dairy prod.	Exp.	–	1.50	–	–	Comp.
Leaf	Memphis, TN	Bubble gum	Exp.	–	–	111	–	Plng.
Leasa Inds.	Miami, FL	Food proc.	Exp.	30	1.50	30	–	Plng.
Leprino Foods	Allendale, MI	Mozzarella cheese	New	200	–	–	Mead & Hunt	Const.
Longmont Foods, Inc.	Longmont, CO	Turkey proc.	New/Renov.	96/46	–	–	Shillington & Assoc.	Stup. 11/90
Lone Star	Oglesby, IL	Grinding facil.	New	–	16.00	–	–	Const.
Lou Anna Foods	Opelousas, LA	Food prod., oil	Exp.	–	4.00	25	–	Const.
Louis Rich	Tulare, CA	Turkey prod.	New	315	–	1000	–	Comp.
Louisiana Catfish	Wisner, LA	–	New	–	1.20	59	–	Plng.

NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employ-ees	Architects/ Engineers	Status & Date
			M					
M&M Mars	Albany, GA	Combo Snacks	Exp.	–	–	100	–	–
M&M Mars	Cleveland, TN	Cookie bars	Exp.	–	–	125	–	Plng.
Macon Foods	Macon, MO	Slaughter house	New	–	1.60	145	–	Plng.
Manchester Farms	Hopkins, SC	Quail proc.	–	–	–	–	–	–
Market Wholesale	Modesto, CA	Dist. ctr.	Exp.	104.6	–	–	Food Plant Engineering	Stup. 2/90
Market Wholesale	Tracy, CA	Dist. ctr.	New	–	–	–	Food Plant Engineering	Stup. 9/90
Marshall Durbin Ind.	Canton, MS	Poultry Proc.	Exp.	–	–	50	–	–
Martin's Potato Chips	Thomasville, PA	Potato chips	New	37	2.20	–	–	Const.
McCain Foods	Othello, WA	Potato proc.	Exp.	–	35.00	100	–	Plng.
McCarty Foods	Vicksburg, MS	Poultry	New	100	10.00	200	Facility Engineers	Stup. 7/91
McCarty Foods	Jackson, MS	Poultry R&D	New	100	13.00	500	Facility Engrs.	Stup. 6/90
McIlhenny Co.	Avery Island, LA	–	Exp.	–	2.90	–	–	Plng.
Medallion Foods	Newport, AR	Tortilla chips	Exp.	–	2.50	50	–	Comp.
Meijer, Inc.	Monroe, MI	Dist. ctr.	New	800	–	–	Food Plant Engineering	Stup. 8/89
Merchandise Warehouse	Indianapolis, IN	Froz. food dist.	New	115	–	–	Webber/Smith	Stup. 3/90
Merita Bakery	Charlotte, NC	Baked prod.	Exp.	–	8.00	–	–	Plng.
Mi Rancho Tortillas	Clovis, CA	Tortillas, mesa for tortillas	New	28	3.00	–	–	Const. '91
Michigan Fruit Canners	Fennville, MI	–	Exp.	–	2.10	212	–	Plng.
Millard Refrigeration Services	Omaha, NE	Meat proc.	Exp.	–	4.70	175	–	–
Miller Brands	Denver, CO	Beer	New	150	3.30	–	–	Plng.
Minute Maid	Lake Cnty., FL	–	Exp.	300	–	375	–	Plng.
Minn-Dak Yeast Co.	Wahpeton, ND	Yeast	New	–	10	–	–	Comp.'90
Mohawk Distilled Products	Miami, FL	Spirits	New	–	15.00	34	–	Plng.
Mama Tish Ital. Spec.	–	Italian ice	New	30	–	50	A. Epstein & Sons Int'l.	Stup. 5/91
Monfort	Grand Island, NE	Beef proc.	Exp.	15	2.40	150	–	Plng.
Mountain Valley Poultry	Crane, MO	Poultry proc.	New	24	1.00	300	–	Plng.
Mountaintop Baking	Pikeville, KY	Baked prod.	New	275	–	600	–	Stup. 1/91
Mrs. Baird's Bakeries	Fort Worth, TX	Bread/buns	w	130	–	125	–	Const.'91
Mrs. Stratton's Salads Co.	Birmingham, AL	–	[illegible]	–	2.50	–	–	Comp.
Multi-Foods	Douglas Cnty., NE	–	New	–	12.80	38	–	Comp.
			N					
National Frozen Foods	Burlington, OR	Fruit/veg. proc.	Exp.	–	1.00	–	–	Const.
Neptune Fisheries	Newport News, VA	Fish	Exp.	–	1.00	30	–	Stup. 1/90
New England Contract Packers	Waterbury, CT	Soda, juice	New	100	–	75	–	Comp.
Newly Weds Foods	Chicago, IL	Bread crumbs	Exp.	–	–	–	–	–
Nippon Suisan Kaisha, Ltd.	Dutch Harbor, AK	Surimi	New	–	65.40	–	–	Const.
Noodles by Leonard	Devils Lake, ND	Pasta	New	–	10.00	–	–	Plng.
Norpac Foods	Hermiston, OR	Frozen veg.	New	–	9.00	150	–	Plng.
Northland Foods	Dos Palos, CA	Dehyd. prod.	New	–	25.00	400	–	–
NutraSweet	Manteno, IL	Sweetener	New	70	12.00	120	Sverdrup	Comp.
			O					
O.K. Foods	Fort Smith, AR	Poultry proc.	Exp.	–	5.20	200	–	–

NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	Sq. Ft.	Est. Cost ($ millions)	Employees	Architects/ Engineers	Status & Date
Ocean Spray Cranberries	Sulphur Springs, TX	Cranberry juice	Exp.	70	1.00	–	–	Const.
Ocean Spray Cranberries	Warren, WI	Cranberry proc.	Exp.	100	5.00	–	–	Comp.
OK Foods	Fort Smith, AR	Poultry proc.	Exp.	–	5.20	200	–	Comp.
Ore-Ida Foods	Pocatello, OH	Froz. entrees	Renov.	80	–	–	Webber/Smith CH_2M Hill	Stup. 3/91
Orbitron Capital Corp.	Thorndale, TX	Oils/cattle feed	New	–	–	65	–	–
Oregon Potato	Boardman, OR	–	New	–	1.20	18	–	–
Oscar Mayer	Columbia, MO	Sausage	Renov.	60	10	–	Sverdrup	Stup. 2/91
			P					
Pace Foods	San Antonio, TX	Picante sauce	Addition	7	1.1	15	Lockwood Greene	–
Park Foods	Canton, OH	Chicken	Exp.	–	13.70	–	–	Plng.
Paul De Lima Co.	Cicero, NY	Coffee	New	40	2.50	10	–	Stup. 9/90
Peco Farms, Inc.	Gordo, AL	–	Exp.	–	1.70	40	–	–
Peco Foods	Gordo, AL	Poultry	Exp.	–	3.00	65	–	Const.
Peco Foods, Inc.	Bay Springs, MS	Poultry proc.	New	–	–	200	–	–
Penn Pak	Greenfield, MO	Bird seed	New	–	–	60	–	Plng.
Pennant Products	Rochester, NY	–	Exp.	35	4.00	–	–	Const.
Pepperidge Farm	Adamstown, PA	Bakery prod.	New	600	180	800	Day & Zimmerman	Stup. '91
Pepsi-Cola	Riverside, CA	Soft drinks	New	–	26.00	–	–	Plng.
Pepsi-Cola	Olathe, KS	Bottler	New	70	–	–	–	Plng.
Pepsi-Cola	Olathe, KS	Bottler	New	145	6.50	–	–	Comp.
Pepsi-Cola Co.	Lincoln, NE	Soft drinks	Exp.	32	–	–	–	Comp.
Pepsi-Cola Co.	Detroit, MI	Soft drinks	New	315	33.00	300	–	–
Pet	Hannibal, MO	Soup	Exp.	40	6.00	50	–	Comp.
Pet Milk Div. of IC Inds.	Buhl, ID	B&M Beans	Exp.	42	4.50	40	–	Const.
Petit Jean Poultry	Stilwell, OK	Poultry proc.	New	50	4.00	500	–	Plng.
PH Orth Co.	Spartanburg, SC	Bakery mixes	New	–	6.00	25	–	–
Pilgrim's Pride Corp.	De Queen, AR	Proc. poultry	Exp.	–	1.50	200	–	Comp.
Pillsbury	Joplin, MO	Frozen dough	Exp.	157	5.00	30	–	Comp.
Pillsbury Jeno's Pizza	Wellston, OH	Pizza	Exp.	–	88.00	480	–	Plng.
Pioneer French Baking Co.	Oxnard, CA	Bakery prod.	Exp.	69	–	200	–	Plng.'90
Pizza Hut	Wichita, KS	Office	Exp.	–	–	200	–	–
Port of Seattle, Terminal 91	Seattle, WA	Fish proc.	New	210	–	–	–	Plng.
Powell Candy	Edina, MN	Candy	Exp.	60	3.00	90	–	Plng.
Powell Valley Foods Co.	Caryville, TN	Frozen foods	Exp.	–	–	100	–	Plng.
Protein Tech. Int'l.	Pryor, OK	Soybean additives	Exp.	–	–	50	–	Plng.
Protein Technologies	Louisville, KY	Soy bean	Exp.	–	20.00	–	–	Comp.
Protein Technologies Int'l.	Memphis, TN	Soy protein & fiber	Exp.	–	50.00	50	–	Comp.
Protimex Aka Douglas Dist.	Oakland, IA	Meat/poultry	New	–	2.10	55	–	Plng.
			Q					
Quaker Oats	Louisville, KY	Bisquit mix	New	169	25.00	130	Haskell Co.	Comp. 12/90
Quaker Oats Co.	St. Joseph, MO	Oat cereal	Exp.	–	2.60	–	–	Plng.
Quaker Oats Gatorade Div.	Kissimmee, FL	Beverages	Exp.	112	2.90	–	–	Const.
Quality Foods	Little Rock, AR	Meat/poultry	Exp.	–	1.00	50	–	Comp.
Quibell Corp.	Berkeley Cnty., WV	Bottled water	New	–	20.00	70	–	Const.
Quik-To-Fix Food Products	Garland, TX	Frozen meat prod.	New	–	–	100	–	–

NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employees	Architects/ Engineers	Status & Date
R								
R&S Meats	Chicago, IL	Meats	Exp.	–	4.50	119	–	Plng.
RJR Nabisco	Naperville, IL	Cereal	Exp.	–	30	–	Sverdrup	–
RJR Nabisco	Atlanta, GA	Bakery prod.	Exp.	–	25.00	–	–	–
Raley's	Sacramento, CA	Liquor, perish.	New	280	–	–	Food Plant Engineering	Stup. 12/91
Ralston-Purina	Sharonville, OH	Grocery prod.	Exp.	–	–	–	–	Comp.'89
Riceland Foods	Stuttgart, AR	R/D ctr.	New	–	1.70	–	–	Const.
Richland Foods	London, KY	Cookies	New	128	8.00	450	–	Stup. 2/90
Richland Turkeys	Olney, IL	Turkey proc.	Exp.	30	1.00	100	–	Comp.
Richmond Cold Storage	Smithfield, VA	Refrig. warehouse	New	40	–	–	Stellar Group	–
Riverview Foods	Glencoe, KY	BBQ sauce	New	–	–	50	–	Plng.
Robert Mondavi Winery	Oakville, CA	Winery	New	–	14.00	–	–	Plng.
Rocco Turkey	Saint Pauls, NC	Turkey proc.	New	–	–	400	–	Comp.
Rockingham Poultry	Jackson Cnty., OH	Chicken prod.	New	–	25.00	–	–	Plng.
Rosetto Foods	Rochester, NY	–	Exp.	22	2.30	50	–	Const.
Round Hill Foods	Pennsylvania	Turkey	New	–	2.40	120	–	–
Roush Baking Products	Cedar Rapids, IA	Baking prod.	Exp.	30	4.00	–	–	Comp.
Ruiz Food Products	Dinuba, CA	Frozen Mex. food	New	160	15.00	1000	–	Const.
Russell Stover Candies	Butler, MO	Chocolates	New	76	–	–	–	Plng.
Russell Stover Candies	Butler, MO	Chocolates	New	103	–	–	–	–
Rymer Foods	Madill, OK	Poultry proc./feed	New	–	100.00	1500	–	Plng.
S								
S.A. Nut Co.	Madill, OK	Pecan proc.	New	–	–	130	–	Plng.
Sanderson Farms	McComb, MS	Chicken proc.	New	100	12.00	325	–	Stup. 9/91
Sandridge Gourmet	Medina, OH	Fresh salads	Exp.	29	–	–	Webber/Smith	Stup. 3/91
Sara Lee Corp.	Florence, AL	–	Exp.	–	1.00	100	–	–
Sauer, C.F. Company	Mauldin, SC	Mayonnaise	Exp.	89	2.50	40	–	Plng.
Savannah Foods & Inds.	Visalia, CA	Pkgd. condiments	New	100	–	–	–	Plng.
Schreiber Foods	De Pere, WI	Cheese prod.	New	80	5.00	–	–	Const.
Scrivner, Inc.	Peoria, IL	Grocery dist.	Exp.	30	–	–	Webber/Smith	Stup. 6/90
Seafood Enterprises	Valdosta, GA	Seafood	New	–	–	183	–	Plng.
Season's Prime	Hereford, TX	Vegetable proc.	New	–	7.00	260	–	Plng.
Shade Foods, Inc.	Olathe, KS	Food prod.	New	134	–	–	–	Comp.
Shade Pasta	Fremont, NE	Food proc.	New	29	–	14	–	Comp.
Shenandoah Valley Water	Shenandoah, VA	Bottled water	New	–	–	70	–	Plng.
Simmons Inds.	Siloam Springs, AR	Poultry proc.	Exp.	–	–	200	–	Comp.
Simmons Industries	Fairland, OK	Chicken feed	New	–	6.00	40	–	Plng.
J.R. Simplot	Aberdeen, ID	Froz. French fries	Exp.	65	–	–	Webber/Smith	Stup. 12/90
Smith Food & Drug	Layton, UT	Ice crm./frz. yog.	New	155	–	–	Webber/Smith	Stup. 9/90
Smithfield Foods	Bladen Cnty., NC	Hog slaughterhouse	New	–	45.00	350	–	–
Smithfield Foods	Portsmouth, VA	Hot dogs	Exp.	20	–	–	–	Const.
Smithfield-Carroll's Farm	Virginia	Feed mill	New	–	–	55	–	Plng.
Smoky Hollow Foods	Little Rock, AR	Meat prod.	Exp.	–	2.00	80	–	Comp.
Southern Hen	Jones Cnty., MS	Poultry proc.	New	–	5.00	500	–	Plng.
S. Minnesota Sugar Coop.	Renville, MN	Molasses	Exp.	–	18.00	–	–	Plng.
St. Peter Creamery	Lake Norden, SD	Whey concentrate	Exp.	200	1.40	22	–	Comp.
Standard Liquor Corp.	Lawrence, KS	Liquor	Exp.	90	–	35	–	–

NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employees	Architects/ Engineers	Status & Date
Starbucks Coffee Co.	Seattle, WA	Coffee	Exp.	68	–	–	–	Plng.
Stockton Dist. Ctr.	Stockton, CA	Refrig. dist. ctr.	New	80	–	–	Stellar Group	–
Suiza Dairy	San Juan, PR	Milk, juice	Exp.	101	–	265	JAI Engineers	–
Sunsweet Growers	Pennsylvania	Prune juice	New	–	5.10	189	–	Plng.
Suntory Water Group	Georgia	Bottled water	New	130	–	150	–	Plng.
Super Food Services	Orlando, FL	Foodservice dist.		–	–	–	Setter, Leach & Lindstrom	Comp.
Superbrand Dairy Prod.	Hammond, LA	Milk & juice	New	52	–	–	Stellar Group	
Swift-Eckrich	Jonesboro, AR	Turkey proc.	New	80	–	300	–	Plng.
Sysco, Inc.	Dallas, TX	Foodservice dist.	Renov.	90	–	–	Webber/Smith	Stup. 12/90
Sysco Corp.	Orlando, FL	Foodservice dist.	Exp.	48	2.1	–	Setter, Leach & Lindstrom	Comp.
Sysco Corp.	Jacksonville, FL	Foodservice dist.	New	115	4.7	–	Setter, Leach & Lindstrom	Comp.
Sysco Corp.	Miami, FL	Foodservice dist.	New	95	4.8	–	Setter, Leach & Lindstrom	Comp.
Sysco Corp.	Atlanta, GA	Foodservice dist.	Exp.	100	3	–	Setter, Leach & Lindstrom	Comp.

T

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employees	Architects/ Engineers	Status & Date
T.W. Garner Food Co.	Winston-Salem, NC	Hot sauce	Exp.	22	–	–	–	Plng.
Taiwan Shrimp Farms	Cameron Cnty., TX	Shrimp	New	–	16.00	175	–	Const.
Taiyo Fishery Co., Ltd.	Unalaska, AK	Fishmeal	New	300	20.00	250	–	Const.
The Creamette Co.	New Hope, MN	Pasta	Exp.	159	–	50	–	–
Tomatek	Firebaugh, CA	Tomato proc.	New	100	–	–	–	Comp.
Townsends	Pittsboro, NC	Poultry proc.	Exp.	30	2.00	–	–	Const.
Townsends	Siler City, NC	Poultry proc.	Exp.	22	2.00	–	–	Const.
Townsends of Arkansas	Batesville, AR	Poultry	Exp.	–	3.00	–	–	Plng.
Tri-Valley Growers	Gridley, CA	Fruit proc.	Exp.	–	10.00	–	–	Plng.
Triple T Foods Strongheart Dog Food	Pittsburg, KS	Dog food	New	5.20	50	–	Setter, Leach & Lindstrom	Comp.
Tropicana Products	Bradenton, FL	Fruit juices	New	63	–	–	–	Comp.
Tropicana Products	Jersey City, NJ	Dist. ctr.	New	210	68	–	Sverdrup	Stup. 6/91
Tropicana Products	Ontario, CA	Juice	Exp.	100	–	–	Stellar Group	–
Turkey Hill Dairy	Conestoga, PA	Milk, drinks	New	54	–	64	JAI Engineers	–
Tyson Food Co.	Fayetteville, AR	Frozen dinners	Exp.	–	–	80	–	Const.
Tyson Foods	Clarksville, AR	Poultry proc.	Exp.	–	2.80	–	–	Const.
Tyson Foods	Springdale, AR	Poultry proc.	Exp.	–	10.30	20	–	–
Tyson Foods	Broken Bow, OK	Chicken proc.	Exp.	–	–	50	–	Plng.
Tyson Foods	Monett, MO	Poultry proc.	Exp.	–	5.00	200	–	Plng.
Tyson Foods	Pine Bluff, AR	Chicken prod.	New	340	30.00	1000	–	Plng.
Tyson Foods	Monroe, NC	Chicken proc.	New	100	–	300	–	Plng.
Tyson Foods	Sanford, NC	Mexican food	New	100	12.00	100	–	Plng.
Tyson Foods, Inc.	Heflin, AL	–	Exp.	–	–	50	–	–
Tyson Foods, Inc.	Blountsville, AL	–	Exp.	–	–	150	–	–

U

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employees	Architects/ Engineers	Status & Date
U.S. Sugar Corp.	Hendry Cnty., FL	Citrus proc.	New	–	–	50	–	Plng.
United Airlines Flight Kitchen	King Cnty., WA	Airline meals	New	61	6.00	180	–	Plng.
United Biscuits PLC	Oakfield, NY	Cookies/crackers	New	20	1.80	–	–	Comp.

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employees	Architects/ Engineers	Status & Date
United Brands, Inc.	Cincinnati, OH	Meats/bananas	New	27.4	4.00	–	Hendon-Lurie	Const.
United Refrig. Storage	Atlanta, GA	Refrig. warehouse	New	150	–	–	Stellar Group	–
U.S. Cold Storage	Nashville, TN	Refrig. warehouse	Exp.	40	–	–	Stellar Group	Comp.'90
U.S. Cold Storage	Laredo, TX	Refrig. warehouse	New	150	–	–	Stellar Group	Comp.'91
U.S. Cold Storage	Tulare, CA	Refrig. warehouse	New	100	–	–	Stellar Group	–
Universal Frozen Foods	Twin Falls, ID	French fries	Exp.	72	24.50	250	–	Const.
Universal Frozen Foods	Twin Falls, ID	–	New	24	4.00	–	–	Const.
Universal Frozen Foods	Pasco, WA	French fries	Exp.	–	10.70	–	–	Plng.
V								
Valley Queen Cheese Factory	Milbank, SD	Cheese/whey	Exp.	–	1.00	–	–	Comp.
Venture Packing Co.	Syracuse, NY	–	Exp.	25	2.30	51	–	Plng.
Vie de France	Alexandria, VA	Sous vide	New	30	–	–	–	–
Vincent Giordano Corp.	Philadelphia, PA	Roast beef	Exp.	10.20	1	–	Hendon-Lurie	Const.
Vindicator of Florida	Mulberry, FL	Irradiated foods	New	25	6.00	–	–	Stup. 4/90
W								
W.H. Voortman	Rialto, CA	Cookies	New	40	10	–	Austin Co.	–
Ward Cheese	Gooding, ID	Cheddar cheese	Addition	40	–	–	Mead & Hunt	–
Washington Frontier Juice	Prosser, WA	Grape proc.	New	40	12.00	55	–	Stup. 1/91
Watson Foods	Taylorville, IL	Foods	Exp.	–	1.40	35	–	Plng.

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NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employees	Architects/ Engineers	Status & Date
Waverly Meat Processing	Waverly, IA	Beef proc.	New	12	1.20	24	–	Plng.
Wayne Poultry	Troy, AL	Poultry	Exp.	32	2.70	45	–	Stup. 2/90
Wells Fargo	Ontario, CA	Office	New	180	–	–	–	Plng.
Westpac Foods	Portland, OR	–	Exp.	–	1.10	12	–	–
Westpac Pacific Foods	Lathrop, CA	Dist. ctr.	New	650	–	–	Food Plant Engineering	Stup. 6/91
William Underwood Co.	Hannibal, MO	Soup	Exp.	40	6.00	50	–	Comp.
Wilton Frozen Foods	Spring Valley, NY	Frozen foods	Exp.	10	2.00	100	–	Plng.
Win Schuler's Foods	Marshall, MI	Soups/sauce	Exp.	17	5.10	30	–	Plng.
Wisconsin Dairies Coop.	Reedsburg, WI	Butter & milk	Addition	4.06	–	–	Mead & Hunt	Const.
Wisconsin Dairies Coop.	Waumandee, WI	Cheddar cheese	Addition	10.65	–	–	Mead & Hunt	Fall '91
Wisconsin Dairies Coop.	Milan, WI	Mozzarella cheese	Addition	18.8	–	–	Mead & Hunt	Stup. 9/90
Wixon Inds./Fontarome	St. Francis, WI	Seasonings/flavors	Exp.	26	1.00	–	Robert Wold	Const.
Worthington Foods	Zanesville, OH	Food prod.	Exp.	100	20.00	–	–	Plng.
Wyandot	Jeffersonville, IN	Tortilla chips	Exp.	30	2.20	–	–	Const.
Y								
YH Green Food Products Corp.	Oxnard, CA	Health drinks	New	–	18.30	–	–	Comp.
Z								
Zapata Haynie Corp.	Abbeville, LA	Fish meal/ oil	Exp.	–	2.70	–	–	Comp.

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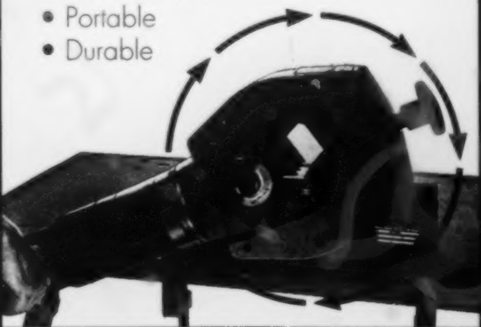

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ANNUAL SALARY SURVEY

FOOD ENGINEERING

ABOUT THE COVER

Say goodbye to the golden age—*Food Engineering's* annual survey on salaries and job satisfaction says both food industry employers and workers are gearing up for a changing economic environment.

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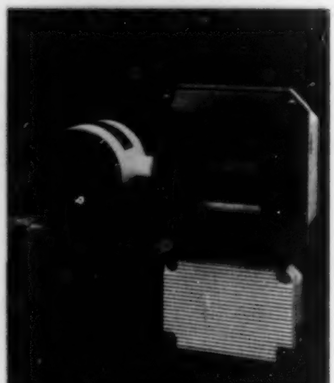

SPECIAL EMPHASIS

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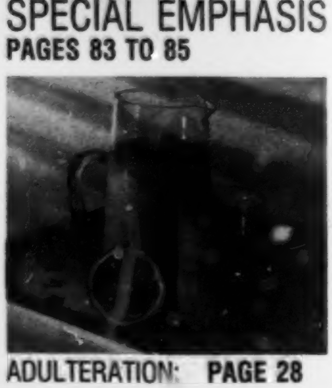

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AWARD-WINNING
EDITORS

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ANNUAL SALARY SURVEY:

Goodbye To The Golden Age

Employees buckle up for a recession, while employers look for different ways to compensate the work force in a changing economic environment.

JOYCE FASSL
MANAGING EDITOR

Despite the warnings of recession since mid-year, food industry employees averaged about a 7 percent increase in 1990, according to the 1,400 people who responded to *Food Engineering*'s annual survey on salaries and job satisfaction.

Food industry personnel are getting more of a return for their labors and have more buying power than the average American worker. According to the U.S. Census Bureau figures for 1989, the median salary for all U.S. workers was $28,906. The median salary for all workers in our survey for this year is $47,214. But economic forecasters are sending out a warning for 1991: Pay raises are expected to be 5 percent, but inflation is expected to come in at 6 percent. If this occurs, it will be the first time in a decade national average salary increases have not kept up with inflation.

How will the food industry retain its best workers as we enter a recession? It won't be easy.

"A 4.5 percent increase is too low an annual increase for an above average performance," says a project engineer from Wisconsin. A quality control manager from Pennsylvania suggests that the "best morale booster would be if lower levels of management were eligible to receive bonuses."

A production supervisor from Wisconsin warns, "This is the first year I have not gotten an increase at least equal to inflation. If this occurs a second time, there may be some active job hunting within my department."

Complaints about small percentage increases continue. According to a quality control manager from New York, "My company does not reward hard work with compensation—5 percent maximum unless you are promoted. Until a person threatens to leave, nothing is done about low salaries. Excellent people have left and are replaced by people who are less competent, making above and beyond what would have kept that person here and content."

According to the Conference Board, a New York City-based network and forum for business executives, more companies are using profit sharing, special incentives and other innovative compensation devices to boost employee productivity and company profitability. Three-fourths of the companies using these programs say they are successful. Over a third of the companies surveyed have individual incentive programs, one fifth have profit sharing programs, and 13 percent have gainsharing plans which reward employees based on the productivity of either their own unit or their company. According to the Conference Board, the days of the traditional merit pay increase are waning. Merit increases are no longer linked to individual performance. In most cases they are an across-the-board small percentage increase companies think they can afford to give in a shakey financial environment. In the future, above average increases will not be given to employees who management just "feels" are doing a good job. These increases will somehow be linked to measurable performance.

MEDIAN SALARY BY EXPERIENCE

	Food	Total
Less than 6 years	$36,499	$34,037
6-9 years	42,187	41,738
10-14 years	43,916	44,166
15-20 years	48,447	48,029
21-24 years	54,078	53,332
25-29 years	56,922	56,153
30+ years	55,629	56,028

Source: Food Engineering 1990 Salary Survey.

"My 1990 review was far better than my '89 review, but my increase was one percent less. I'll let you folks speculate on rationale," says a project engineer from Pennsylvania.

Because of employee complaints and a slowing economy, companies are searching for compensation plans that will provide specific incentives linked to corporate or individual department performance. Variable pay plans are being used to improve productivity and to help companies stay profitable in an increasingly competitive environment. According to the Conference Board, gainsharing will become popular in manufacturing environments that lend themselves to concrete productivity measures. The network also predicts that individual incentives will become more frequent for salaried employees, particularly managers and supervisors.

Equal pay for equal work?

On average, men working in the food industry received an increase just over 5 percent and women received 8.75 percent this year. The average male salary in the food industry rose to $50,323, while the average female salary was $36,487.

Nationally, regardless of industry, women make 68 cents for every dollar a man makes. In *FE's* survey, women are doing just a little better, making about 72 cents on the man's dollar.

While it is important to keep in mind that over half of the female re-

MEDIAN SALARY BY REGION

Mountain	$51,785
New England	50,171
Mid-Atlantic	45,967
East North Central	45,657
West North Central	44,166
East South Central	42,812
Pacific	42,320
West South Central	42,142
South Atlantic	39,499

Source: Food Engineering 1990 Salary Survey.

JOB TITLE BY EDUCATION & SEX

Job title	High school or less	Some college	Bachelor's Degree	Master's Degree	Ph.D.	Male	Female
President	13.9%	30.4%	34.2%	19.0%	2.5%	93.7%	6.3%
V.P./manufacturing	5.8	13.5	50.0	28.8	1.9	98.1	1.9
V.P./marketing	3.1	21.9	62.5	12.5	–	90.6	6.2
V.P./R&D	–	4.3	34.8	30.4	30.4	95.7	–
Plant manager	13.4	32.0	40.2	14.4	–	92.8	6.2
Production supervisor	12.2	28.4	48.6	9.5	1.4	85.1	13.5
Engineering manager	4.8	18.1	57.1	18.1	1.9	99.0	1.0
Project engineer	2.1	5.1	68.6	22.1	2.1	90.6	8.6
Packaging manager	4.3	39.1	39.1	13.0	4.3	91.3	8.7
Purchasing manager	14.0	32.6	39.5	14.0	–	74.4	25.6
Technical director	–	4.8	45.8	30.1	19.3	88.0	12.0
QC manager	1.4	9.7	67.4	19.4	2.1	70.1	29.2
Food technologist	–	6.5	47.6	33.3	12.5	58.3	41.1
Marketing/product/sales mgr.	4.0	13.3	49.3	32.0	1.3	76.0	24.0
Sanit./maint. manager	20.6	44.1	32.4	2.9	–	91.2	8.8
Trans./dist. manager	–	46.7	46.7	6.7	–	86.7	13.3
Purchasing agent	8.3	33.3	50.0	8.3	-	75.0	25.0

Percentages may not add up to 100 due to incomplete or duplicate answers.

Source: Food Engineering 1990 Salary Survey.

spondents to our survey have less than ten years of experience and more than half of the men responding have over 20 years on the job, women's demand for equal pay for equal work didn't let up in this year's survey once again.

When asked, what is the one greatest obstacle that is stopping you from performing your job effectively, a chemist from Missouri put it bluntly—"Being female." A microbiology manager from Ohio says, "I work for a very conservative company. There is still an old boys club...women are basically ignored. A man generally starts out at a higher salary regardless of past experience."

It's hard to believe this can still happen in the '90s, but a food technologist from New Jersey reports her boss remarked during her last performance review, "Just between you and me, you're making pretty good money for a girl." She wonders if she is assigned projects that he feels are "pretty good for a girl." A project manager from California said her boss told her if she were a man, she'd be making $10,000 more a year. She then asked if *Food Engineering* had the courage to highlight the comparisons between men's and women's salaries.

The majority of the women responding to our survey listed their job title as food technologist or quality

MEDIAN SALARY BY SEX

		% Increase over 1989
Male	$50,323	5.35
Female	36,487	8.75

Source: Food Engineering 1990 Salary Survey.

MEDIAN SALARY BY JOB TITLE

President	$54,166*
VP Manufacturing	75,555
VP Marketing	73,999
Plant Manager	50,416
Production Supervisor	38,157
Engineering Manager	57,954
Project Engineer	47,678
Purchasing Manager	43,928
Technical Director	62,812
Quality Control Manager	40,644
Food Technologist	40,151
Marketing/Product/Sales Manager	51,166
Sanitation/Maintenance Manager	44,558
Other	49,037

*The median salary level shown for president is due to the fact that most are employed by small companies or are self-employed. Also much of the compensation at this level is non-salary—bonuses, profit-sharing etc.

Source: Food Engineering 1990 Salary Survey.

JOB RESPONSIBILITY & SATISFACTION

Have your job responsibilities increased in the last year?

	Male	Female
Increased	65%	72%
Decreased	3%	4%
Stayed the same	32%	22%

Rate your overall level of job satisfaction.

	Male	Female
Good balance of responsibility, salary and prospects	40%	31%
Two of the three factors	38%	40%
Only one of the three factors	15%	20%
None of the three factors	4%	7%

Percentages may not add up to 100 due to incomplete or duplicate answers.

Source: Food Engineering 1990 Salary Survey.

MEDIAN SALARY BY PRODUCT

Pasta	$49,317
Fat & oil	49,305
Beverage	48,916
Grain mill	48,275
Bakery	48,094
Seafood	48,055
Other	47,777
Confection	47,499
Dairy	46,573
Fruit & vegetable	46,249
Meat	44,037

Source: Food Engineering 1990 Salary Survey.

control manager. (Almost half of the women fell into these two job titles.) Let's see how the salaries stacked up against the men's. The median salary for a female food technologist was $33,213, while her male counterpart earned $42,199. A female food technologists with 5-10 years of experience earned $37,142; the male $38,888. The female quality control manager's median salary was $37,726 and the male, $42,044. A female quality control manager with 5-10 years of experience earned $36,000, the male $37,500. Looking back over previous *FE* surveys, research shows that the gap is beginning to narrow somewhat in these two job titles. But overall, pay for women in the food industry still lags behind men's about 30 percent.

In addition to being underpaid, many women feel that they are not given the plum projects. A quality control manager from Texas says that

SALARY BY JOB TITLE (in thousands of dollars)

	Under 25	25-29.9	30-34.9	35-39.9	40-44.9	45-49.9	50-54.9	55-59.9	60-69.9	70 or more
President	15.2%	2.5%	5.1%	6.3%	7.6%	3.8%	11.4%	5.1%	5.1%	38.0%
V.P./manufacturing	1.9	1.9	9.6	3.8	5.8	1.9	9.6	1.9	3.8	59.6
V.P./marketing	–	6.2	–	–	3.1	6.2	3.1	6.2	18.8	56.2
Plant manager	1.0	4.1	10.3	14.4	11.3	7.2	18.6	10.3	11.3	11.3
Production supervisor	8.1	9.5	16.2	25.7	13.5	9.5	2.7	4.1	6.8	4.1
Engineering manager	1.0	1.9	3.8	6.7	5.7	11.4	13.3	10.5	23.8	21.9
Project engineer	–	1.4	5.0	13.6	19.3	20.0	15.7	11.4	12.1	1.4
Packaging manager	8.7	–	13.0	4.3	13.0	4.3	21.7	8.7	13.0	13.0
Purchasing manager	4.7	9.3	9.3	14.0	16.3	2.3	9.3	7.0	9.3	18.6
Technical director	1.2	2.4	7.2	2.4	2.4	8.4	10.8	9.6	19.3	36.1
QC manager	7.6	9.0	14.6	16.0	21.5	13.9	7.6	2.8	6.2	0.7
Food technologist	9.5	13.7	14.3	11.9	19.6	11.3	6.5	4.2	5.4	3.6
Marketing/product/ sales manager	2.7	8.0	4.0	12.0	6.7	12.0	20.0	14.7	10.7	9.3
Sanitation/ maintenance manager	2.9	–	29.4	20.6	14.7	17.6	8.8	5.9	–	–
Transportation/ distribution manager	–	–	20.0	6.7	6.7	13.3	13.3	–	26.7	13.3
Purchasing agent	16.7	16.7	8.3	–	8.3	33.3	16.7	–	–	–

Percentages may not add up to 100 due to incomplete or duplicate answers.

Source: Food Engineering 1990 Salary Survey.

MEDIAN SALARY BY EDUCATION

Ph.D.	$64,285
Master's degree	52,082
Bachelor's degree	46,372
Some college	39,358
High School or less	41,785

Source: Food Engineering 1990 Salary Survey.

women are often given the "little picky jobs" because they are able to follow through more on projects that require a lot of attention to detail. "The projects may seem small, but they are hardest to achieve." But this feeling is probably not limited to the food industry.

Having it all

If you were offered a new job tomorrow with at least a 20 percent increase, what other factors would have to be included for you to accept the job? According to *FE's* readers, location is number one. Many of our survey respondents were not willing to give up the 3 to 5 weeks of vacation they have built up, despite the 20 percent increase in salary. Others were more concerned with the level of upper management they would have to deal with.

Mostly, to change jobs, food industry people want it all—day care, better retirement and health care plans, less travel, more travel, less hours, comp time, growth potential. But most important of all, they want more responsive and humane bosses. A quality control manager from Pennsylvania sums it up best: "a corporate climate that fosters teamwork, and fewer self-serving egotists. Money doesn't matter—how you're treated does." ▲

CHILTON'S JANUARY 1991

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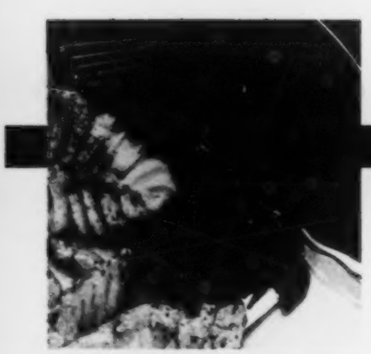
FOOD ENGINEERING



ABOUT THE COVER

Nutritional concerns and varying lifestyles are driving forces behind the evolution of the frozen and shelf-stable food industries. One result is a greater emphasis on niche marketing.
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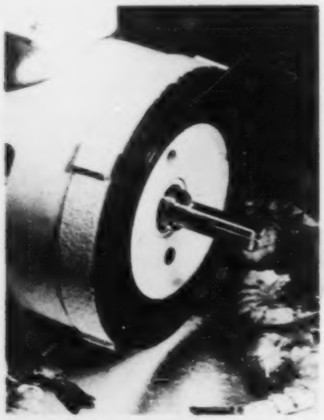

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JESSE H. NEAL
AWARD-WINNING
EDITORS

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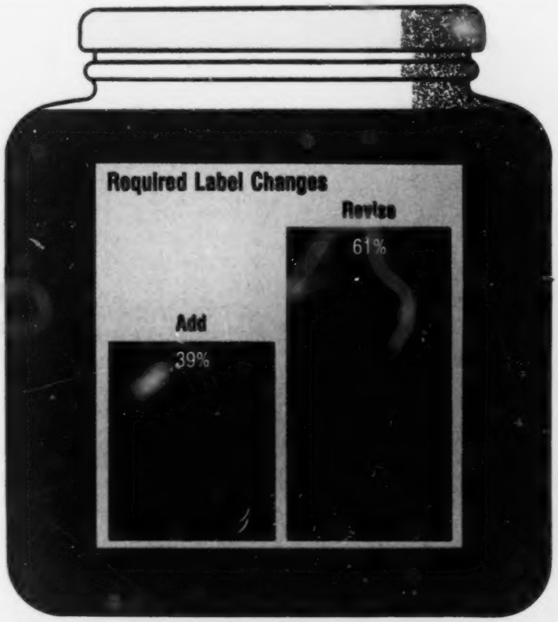
More time for labeling needed...

The National Food Processors Association (NFPA) has told the Food and Drug Administration (FDA) that industry needs more time to implement mandatory nutrition labeling and has asked the agency to make other key changes in its proposed regulations.

The NFPA is seeking a rollback of the proposed mid-1992 deadline to May 8, 1993 to "obtain the necessary nutrition data, undertake analyses, and redesigns and order new labels."

In response to FDA's estimate that the new regulations affect only 77,000 labels, NFPA said just **one company it surveyed had 21,558 different labels** on hand. Different labels are required to identify different varieties of fruits, vegetables, optional color types, various styles of pack, types of packing medium, types of sweeteners used, use of different flavors, spices, ingredients, different sizes of containers, and various brand names.

Rather than squander resources on analytical testing for each packaged product, the NFPA said the FDA should allow manufacturers to base nutrient information on average values derived from sound nutrient databases.



Some 39 percent of packaged food will need to add nutritional information to their labels while the 61 percent that already provide nutritional information will have to revise their labels to comply with new requirements. (Source: NFPA.)

Lawyers address food labeling...

Sheryl A. Marcouiller, food and drug counsel to Kraft General Foods, Inc., challenged the reasoning behind rules that require temporary marketing permits for dairy products that deviate from standards of identity. Addressing the annual Food and Drug Law Institute (FDLI) conference in Washington, DC held in mid-December, Marcouiller added that companies want to highlight the differences between "light" and regular foods, not hide them.

She questioned why "light" sour cream must get a permit while "light" yogurt is exempt. She added that the temporary permits for a major new product launch are "less than candid." Marcouillar said, "If the name for a new food like 'light sour cream' is clear, the temporary marketing permit process unnecessarily wastes valuable Food and Drug Administration (FDA) resources."

...FDA supports recycling

The FDLI conference also broached the topic of recycling. The FDA supports recycling schemes such as industry trim and curbside collection programs, according to Kenneth J. Falci, Center for Food Safety and Applied Nutrition. Currently, the FDA has not determined how it will regulate recyclable polymers for food-contact use. However, at the very least, the agency expects recyclable polymers to meet virgin polymer standards and recyclers to collect plastic early in the disposal chain. Falci added that the FDA is seeking input from the industry regarding regulation of recycled food packaging.

Steven Paul Mahinka of Morgan, Lewis & Bockius, questioned the integrity of companies that advertise their plastic as being theoretically recyclable in markets where there are no facilities to recycle it. He also noted that the claims have been shifting from biodegradable to compostable.

INDUSTRY REPORT

Food industry must earn trust

"We must convince the consumer to trust us so when we put nutritional information on the label they'll believe us," said Keith Rinehart, vice president of technical services at Perdue Farms, Inc. as he discussed industry priorities at a seminar held at the Department of Food Science at the University of Delaware, Newark, DE.

Beginning in January, Perdue will provide nutritional information on its labels. Rinehart expressed **concern regarding consumers' understanding of cholesterol** *since as he said, "even 90 percent of the medical people are uninformed about cholesterol."*

Red meat & poultry Per capita consumption (in pounds)

Year	Red meat	Poultry
1990	130.5	90.4
1995[1]	125.0	110.0
2000[2]	118.0	122.0

[1] USDA estimate
[2] Rinehart's forecast

Source: Keith Rinehart of Perdue Farms, Inc.

Although chicken and red meat have the same amount of cholesterol, consumer perception that chicken is healthier continues to drive sales of poultry. Fish sales have also benefited from this trend and Rinehart said Perdue is considering the possibility of going into the fish business.

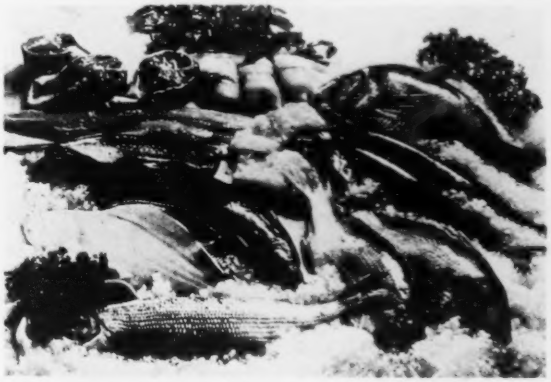
Rinehart also addressed areas the broiler industry is emphasizing in the wake of consumer health concerns and desire for convenience. Consumers can expect to see more skinless, boneless chicken, value-added products and advanced packaging to extend shelf life, he added.

However, environmental concerns may stymie development of controlled atmosphere packaging since its additional layers of material make it difficult to landfill, he said. But, Perdue has addressed environmentalism on another front, he said, through the use of fermentation of processing waste to destroy any chemicals that could leach into the ground of landfills.

Industry seeks bigger catch

This won't be the one that got away if the National Fisheries Institute (NFI) succeeds in fulfilling its goal of increasing U.S. per capita consumption of fish from the current 16 pounds per person to 20 pounds by the end of the decade.

NFI executive vice president Lee Weddig and staff economist Ron Rogness based their projections on three areas of growth: **Shrimp consumption has been surging** *over the past five years and is expected to continue. Unused or underutilized species from the coast of Alaska offer potential growth, with species including arrowtooth flounder, hake and Pacific whiting stocks. Finally,* **greater commitment to aquaculture** *by government and industry will be necessary to boost consumption.*



Increased consumption of shrimp and underutilized species will reel in increased seafood sales. (Source: NFI).

Dow Corning unveils R&D center

A new $30 million research and development center was unveiled by Dow Corning Corp. in mid-October at the firm's global headquarters in Midland, MI. The 164,000 sq. ft. facility features 60 labs which will focus on developing silicone products. Applications for the food industry include silicone lubricants, antifoams and release agents that meet U.S. Department of Agriculture and Food and Drug Administration standards. The facility was opened in conjunction with the opening of an $8 million facility in Yamakita, Japan.

OLIVINE
PETIT NAVIRE
CHICO SAN
CRISPY
RICE
HEINZ
儿营养米粉
Plasmon
BISCOTTINO GRANULATO
caldo de c
ORLA
POULET
HEINZ SPAGHERO
Weight Watchers
HEINZ SPICY BROWN MUSTARD
HEINZ Spaghetti Hoops
HEINZ TOMATO KETCHUP
tomate natural triturado extra
Ore Ida Deep Fries
AMORE
StarKist CHUNK LIGHT TUNA
StarKist PRIME CATCH
REWARD
ORLANDO
CHOCO BROWN
HEINZ FÈVES ET SAUCE-TOMATE
HEINZ ハインツ
HEINZ Cream of Tomato
NEW 9 Lives GROUND CAT FOOD
HEINZ VEGETARIAN BEA
MUSTARD OLD STYLE
Delicious with Chicken

SAY HELLO TO THE GLOBAL MARKETPLACE

To effectively compete, companies must increase spending on product development which will be financed through market expansion. U.S. firms must discover these new markets—throughout the world.

PATRICIA M. DILLON
SENIOR ASSOCIATE EDITOR

Global marketing isn't an exotic luxury for the adventurous few. Instead, it is a matter of survival. To survive in today's rapidly changing market, food companies must develop new products that are only possible with innovative ingredients and technology. Technological breakthroughs cost money and coupled with the shortened lifespan of products, the cost of product development has skyrocketed. With essential product development costs increasing, how can food companies afford to stay in business?

By increasing the number of products sold, according to James A. Tompkins of Tompkins Associates,

Heinz's worldwide prowess is legendary as demonstrated with this array of products. (Source: H.J. Heinz Co.)

[redacted]

U.S. Firm	Acquisition/ Investment	Country	Products
CPC International Foods	Conimex Ambrosia Desserts	Netherlands U.K.	Oriental food Desserts
Campbell Soup Co.	B.E. Verduijn	Netherlands	Confections
Chiquita Brands	Frupac (Cincinnati)	Chile	–
Coca-Cola	C-C Bottlers	Australia	Soft drinks
ConAgra, Inc.	Elders (Omaha) Dean Foods (Franklin Park, IL)	Australia U.K.	Brewery Foodservice products
Kraft/General Foods	Pietro Negroni	Italy	Cold meats
Geo. A. Hormel	Parkin Food	U.K.	Entrees
McCormick & Co.	Old Bay Crab Spice	U.K.	Spices
Philip Morris	Jacobs Suchard	Switzerland	Coffee, chocolate
Van Camp Seafood	P.T. Mantrust	Indonesia	Cannery

Source: The Food Institute.

Inc., a manufacturing strategy consultant based in Raleigh, NC. Since the U.S. food market is saturated, new markets must be found and other countries offer an entire world of opportunity. As Tompkins said, "there is really no choice" but to go global.

Since successful global products such as Coca-Cola or McDonald's hamburgers are not identical products worldwide, Tompkins said, "the correct definition of a world product or a global product is a product that has been developed while considering the needs for global customization," he added.

The Quaker Oats Co. believes in the concept of a pan-European product, according to Ron Bottrell, director of media relations. *Cruesli* cereal is manufactured in Rotterdam and is sold throughout Europe without any changes in flavor. Although it is less sweet than American breakfast cereals, the only difference between Cruesli cereal sold in different European countries is the language on the packaging.

Meeting the challenges of a global market is only possible by thinking global and acting local. Raw material transportation, production/packaging and finished goods transportation should function on a local level, yet network with subsidiaries in other countries, said Roger C. Bahnsen, partner, Coopers & Lybrand (C&L), New York.

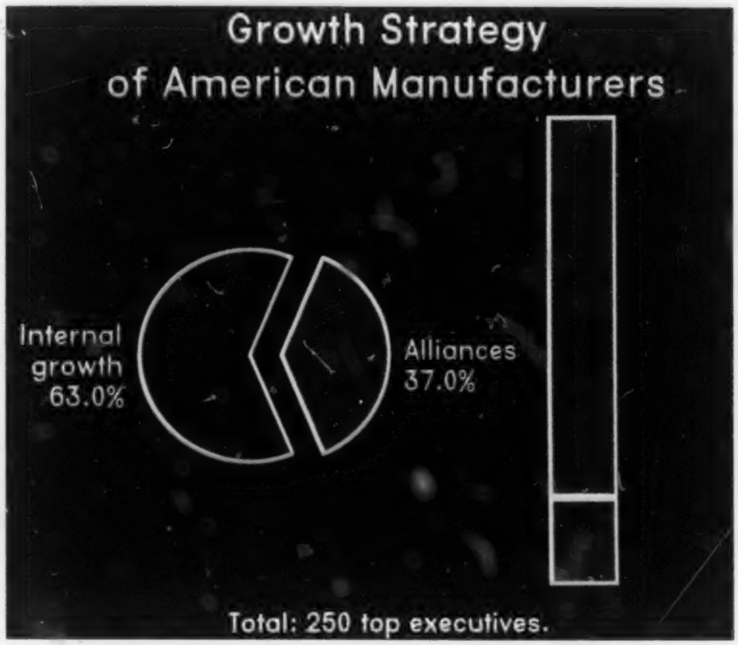
Justify the cost

Top multinational companies have always shipped commodities, such as coffee beans, sugar, rice, and coffee from isolated regions to manufacturing facilities located throughout the world. However, it is not always practical to ship finished products as far, said James Warner, head of C&L's food & drink group in Europe. Gourmet or niche products, such as Russian caviar, American *Godiva* chocolate, *Beck's* beer, and French wine that sell at premium prices are examples of food products that justify the costs of shipping globally.

If global logistics is too heavy a concept, Warner said that many companies would benefit if they simply operated on a continental basis. Unification of the European market makes it sensible for a European food plant to ship finished products anywhere else on the European continent. Similarly, the U.S.-Canada free trade agreement and movement toward a U.S.-Mexico trade agreement would make the entire North American continent a single area that could coordinate logistics.

To formulate an efficient logistics strategy, Tompkins listed factors that must be addressed: time zones, languages, international fund transfers, currency transactions, customs, government agents, tariffs, trade restrictions, documentation, packaging, freight forwarding and cultural practices.

He emphasized the importance of becoming familiar with global logistics to avoid common complaints such as late delivery, poor communications or unreliable quality.



Thirty seven percent of the executives surveyed said they expect their companies to grow through acquisitions, joint ventures and strategic alliances. They expect four-fifths of these ventures to be with foreign partners. (Source: Grant Thornton.)

To overcome some of these problems, American businesspeople must avoid depending on telephone conversations or faxed messages to establish their first meeting with an overseas contact, said Rumen Dontchev, a specification technologist for American Home Food, Milton, PA.

Dontchev, originally from Bulgaria, said communication problems evolve from cultural differences and can be avoided by first meeting clients face to face since "international business is still a very personal thing." While the personal touch is essential to global expansion, so is a strategy.

Nestlé's global strategy was summarized by Paul Kamber, senior vice president technical management at Nestec Ltd. in Vevey, Switzerland, as being the maximizing of synergies.

ConAgra, like Nestlé, gives its subsidiary companies enough independence to respond quickly to changing global conditions. An example of synergy is ConAgra's internal joint venture with its U.S. poultry company and its European company. Basically, ConAgra Europe will manage operations in Spain and Portugal and ConAgra Poultry will provide technical support.

Omaha-based ConAgra, which has operations in Asia, Europe, and Latin America, says it does not yet have a global manufacturing strategy. However, such a plan will be considered as new businesses are added, said Raymond Destin, executive vice president, Europe. He described the relationship between U.S. and European operations as being limited to "capital investment, banking strategies, legal coordination of acquisitions. Technical help can be obtained on request in all other areas."

Other large U.S. food companies are doing more business in overseas markets. International businesses accounted for over half of Borden's recent acquisitions, and "it is no accident," according to CEO R.J. Ventres as he addressed financial analysts in New York in November. In 1990, international sales are projected at about $2.2 billion or 28 percent of the company's total sales. Half of Borden's international business is in Europe, with the rest in the Pacific Rim and Latin America. Ventres added that Borden's strategy has succeeded in letting global acquisitions fuel growth in all of its businesses.

With the unified European market only a few years away, Heinz is preparing to gain a sizeable foothold in the market by building what it says is Western Europe's largest and most modern food processing plant at Kitt Green in the UK. The Pittsburgh-based food processor also recently purchased the *Orlando* line of tomato products to break into the Spanish market.

EC '92 has also beckoned Quaker Oats, which has had a presence in Europe since the turn of the century, to move its European headquarters from Chicago to Brussels by mid-1991. Just over half of Quaker's $1.08 billion business in Europe ($5 billion worldwide) is comprised of pet food which continues to grow. Quaker's *Gatorade*, which has been in Italy for two years, has been introduced in France

Foreign firm	Country	Acquisition/ Investment	Products
Ezaki Glico	Japan	MEI Diversified	Candy, snacks
Guinness Import	U.K.	All Brand Importers	Beer importer
Huhtamaki Oy	Finland	Carousel Industries	Gumballs
Kyotaru Co.	Japan	Best Western Foods	Beef
President Ent.	Taiwan	Wyndham Foods	Girl Scout cookies
Procordia Group	Sweden	Bunte General	Seasonal candy
Polly Peck Int'l.	U.K.	Standard Fruit & Veg.	Fresh produce
R.T. Holdings Int'l.	Belgium	Cheese Division of Universal Foods	Cheese
	Belgium	U.S. cookie operation from BSN France	Cookies
Wessanen	Netherlands	Penn Dairies	Milk/dairy

Source: The Food Institute.

and Germany and will debut in the U.K. and Spain.

The collapse of communism in Eastern Europe has opened up more markets for U.S. companies already established in Western Europe. Monika Pacher, director USA of Industrial Cooperation and Development of Austria, an international consulting firm based in New York, echoed the words of Mikhail Gorbachev when she said now is the time for companies to position themselves in Eastern Europe and the USSR. "Americans are waiting for the dust to settle, but companies that make commitments within the next two to three years will take the market," she said. Pacher acknowledged difficulties with currency transfer but added that labor and production costs, which are as valuable as hard currency, are lower. Key advantages to getting into Eastern Europe are its low operations cost and access to other East European countries. Eventually, contacts lead to the U.S.S.R., she added.

A few top dogs

James E. Moorehouse, vice president of A.C. Kearney, a Chicago-based consulting firm, agreed that it is imperative to establish brand presence now in the USSR. "Only one or two top brands can be established per category in the Soviet Union. The infrastructure makes it tough to set up more than three,'' he said. Moorehouse acknowledged that initially, profits are scant but that the shear size of the market makes it worth the wait. He added that American companies must help find markets for Soviet and Eastern European goods to boost currency value.

Dontchev agreed, saying the convertibility of the ruble is meaningless if it is not backed by Soviet manufactured goods. "Gold isn't the only thing backing currency. The Soviets must have something worth selling otherwise, once a convertibility factor is established, the ruble will be devalued," he said.

Many of the international U.S. companies already are acting on plans to discover the capitalistic potential of Eastern Europe. Borden is negotiating to buy an existing bakery business near Leipzig, eastern Germany (formerly East Germany), which it plans to modernize and expand. In November, the company opened its first bakery retail outlet, *Nur Hier*, in eastern Germany. In addition, 40 new routes and four depots have been established to support future growth in the eastern Germany.

Heinz reorganized its European management structure and has revitalized its *Weight Watchers* franchise. In eastern Germany, the first Weight Watcher meetings were held in September 1990.

With sales over $15.5 billion in fiscal year 1990, ConAgra CEO Charles Harper stated the company's goals are to continue development of new products and proprietary technology which will "make ConAgra the best positioned U.S. company to help feed people better in the Soviet Union and Eastern Europe." ConAgra formed Eastern Europe and Soviet Union companies this year and signed an agreement to manage poultry and hog operations in the USSR.

Borden boasted of its first opening of a Nur Hier retail bakery in eastern Germany. (Source: Borden.)

S&W Fine Foods, Inc., Ramon, CA is an example of how a relatively small company established a global presence. Since the early 1920s, the company built its international presence from Hong Kong, the Philippines and Singapore to throughout the world. "It's no miracle," said Peter McKewen, vice president of operations. "The business was built up inch by inch. You don't charge into a new market; you tend to crawl in."

McKewen said S&W achieves distribution through its own representatives, local distributors and foreign agricultural programs which promote imports on three to four year cycles. S&W has entered the Eastern European market with a unique relationship with a heavy truck supplier. Mercedes in Germany pays cash for S&W products which it trades for Mercedes truck parts manufactured by Skoda Works based in Czechoslavakia. "We find it's not risky dealing in Eastern Europe because we get our cash beforehand," he said.

The pluralistic east

Each of the Eastern European countries are developing at a different pace: Dontchev described Hungary as the capitalist's best bet; Poland as politically dynamic but economically sluggish; Romania and Bulgaria as slow to change.

Experience, Inc., a world-wide agribusiness consultant, confirmed that "Hungary is the logical cornerstone for establishing a presence in Eastern Europe." Michael S. Munro, president and CEO of Experience, added that, "New legislation favors foreign investment. Private property reforms make it possible to buy equity in former state-owned enterprises and the government expects to privatize one third of its state enterprises," Munro added. State enterprises currently represent about 26 percent of all companies in Hungary.

Hungary became the first Eastern European country to receive permanent Most Favored Nation Trade status. It also has lower tariff rates under Generalized System of Preferences.

Meanwhile strides have been made in Poland by A. Epstein and Sons, International which announced its $40 million meat processing joint venture in September. "The concept that third world manufacturing conditions prevail in Eastern Europe is a fallacy," said Sidney Epstein when *FE* brought up the widely-held belief. "Central services are available, such as electricity and water," he said, "phone services aren't great, but you can build there," he said referring to the 600,000 square foot plant Epstein is building in the Starachowice joint venture.

Abraham Bakal, president of ABIC International Consultants, Inc., Fairfield, NJ, said any medium- to large-sized company that fails to investigate opportunities in Europe may lose its market in the U.S. Europeans are looking as closely at the U.S. market as Americans should be looking at the European market, he added. Both the Food and Drug Administration and Europe's regulatory agency are attuned to each other's regulations to the point that there may be common regulations between Canada, the U.S. and Western Europe within the next ten years, Bakal said. This confirms the global market has arrived and U.S. food companies must be ready to compete. ▲

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HEY, MYRTLE, DO YOU THINK WE'LL EVER GET CIM?

NEW
FOOD PLANT CONTEST
SEE PAGE 11

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ABOUT THE COVER

We've come a long way, baby! In the food industry, automation technology is now evolutionary, not revolutionary. Photo source: Bettmann Archive.

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HEINZ
TOMATO
KETCHUP
HEINZ

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33 Compact Reactor Meets Pilot Needs
Reactor has the capacity to support pilot and scale-up studies aimed at developing new product applications, yet is small and mobile enough to move from lab to lab.

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JESSE H. NEAL
AWARD-WINNING
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GLASS, METAL & PAPERBOARD

PACKAGING STANDBYS

Poised For A Comeback

Two and one-half oz. glass jars were chosen by Heinz for packaging ketchup for room service trays because many hotels want to present an upscale image which doesn't come across with foil bags.

(Source: Heinz USA.)

Traditional packages are still holding their own with an environmentally-conscious public. But can the conflicting forces of recyclability and convenience live side by side in the packaging arena?

JOYCE FASSL
MANAGING EDITOR

If the *Saturday Night Live* "Church Lady" worked for the food industry, her motto might be, "How Convenient...and How Recyclable?" But can these two forces live side by side and still make a happy consumer? Viewers may have to tune in at the year 2000 for the dramatic conclusion of "As the Package Recycles."

As the world changes, so goes the packaging industry. More single parents, more working parents, more single people, leading everyone to crave—yes, the most over-used word in the food industry today—convenience.

But as consumers crave convenience, many are willing to inconvenience themselves enough to recycle the packages that all these great foods come in. (For an closer look at recycling, see the sidebar on the next page.)

According to the Department of Commerce (DOC), intense supermarket space competition makes packaging more important than ever. U.S. lifestyles are not only effecting the types of new products developed, but also the types of packages developed. The large baby boomer segment of consumers is moving into middle age, the group which traditionally spends

GLASS, METAL & PAPERBOARD

MAXWELL HOUSE
CAPPIO
ICED CAPPUCCINO

Kraft General Foods recently introduced a new beverage, *Cappio* Iced Cappuccino, in aluminum cans. (Source: Reynolds Metals Co.)

Recycling: Less trash, more cash for manufacturers?

The average American throws away about four pounds of trash every day. Recycling and waste management has become so important, it is now one of the top four concerns of Americans. (Solving problems related to crime and drugs, finding a cure for AIDS, and health care cost containment are the three top priorities.) As a result, environmentally-friendly packaging has become one of the top priorities of food manufacturers.

Ironically, the perceived top causes of the consumer solid waste problem are not the top contributors to the nation's landfills, according to a study on public attitudes and the environment conducted last year by the Roper Organization for S.C. Johnson & Son (see chart at right). What Americans think are the top four causes constitute only about 10 percent of what really goes into a typical landfill. The bottom four perceived causes of the problem—yard waste, food scraps, paper napkins and plates and wastepaper—constitute nearly 50 percent of the average landfill.

"Pressures to reduce solid waste, incineratables and landfills go far beyond the aluminum can which in fact makes up less than one percent of the municipal waste stream," said John C. Miller, senior engineer at Reynolds Metals, speaking at Pack Expo held last November in Chicago. More than 50 percent of all aluminum cans manufactured in the '80s were recycled, he added. "Recycling is essential to the long-term viability of the packaging industry, and the more progress we can show, the better."

Reynolds has made strides to increase recycling. After cans are purchased from consumers, aluminum is sent to Reynolds recycling plants for processing. There it is prepared for reclamation plants where it is melted down and cast into ingot for rolling mills to make can stock which is then shipped to plants for fabrication into new cans. This system can move cans from a retail shelf to a consumer, through the recycling process and back to the retailer in six weeks. Reclaimed aluminum provides one-third of Reynolds' metal requirements.

Reynolds wants to expand its recycling efforts to aluminum foil. According to the company, aluminum foil is recyclable, but it must be returned clean. Reynolds is also looking into recycling aluminum in laminated packages, but this project is still in a planning phase. Plastic and paper would be burned away and aluminum would remain, yielding a granular aluminum suitable for destructive materials.

American perceive glass bottles as taking up about the same amount of space in landfills as aluminum cans. According Ann E. Estes of Owens-Brockway Glass Containers, the attributes of glass packaging are its microwaveability, reclosability and *recyclability*.

The glass industry is growing more quickly in other parts of the world where recycling is becoming increasingly important. For example in Germany, yogurt is packaged in glass; Italy, tuna fish; South America, milk. Germany has very aggressive recycling laws, so even meat patés are sold in glass containers, she said.

Paper and paperboard manufacturers have also increased environmental awareness. According to Evan Wise manager of mill research at Jefferson Smurfit Research Center, Carol Stream, IL the technology now exists to make quality recycled products. "The U.S. currently recycles about 30 percent of the paper produced," he said, but within the next five years the goal is 40 percent.

the most at the supermarket. They want convenience and are willing to pay for it, according to DOC.

But, the convenience-hungry consumers of '80s have gone "green," causing the more traditional forms of packaging—glass, metal and paperboard—to give plastic a run for its money.

Shipments of metal cans rose about 3 percent in 1990, glass about 1 percent, according to *The U.S. Industrial Outlook*. But the plastic bottles which enjoyed double digit growth in 1988 and 1989 slipped to a 1.5 percent increase for 1990. The majority of growth in metal cans came from the increased use of cans for soft drinks.

One example of a new beverage packaged in aluminum cans comes from Kraft General Foods (KGF), Glenview, IL. The company recently introduced *Cappio* Iced Cappuccino in aluminum cans supplied by Reynolds Metal, Richmond, VA. According to Ann Marks, marketing manager, new product development for KGF, the can was chosen because of its attractive and distinctive style. Marks likes this container, which is retort processed, because it is non-breakable and more portable than other containers KGF may have chosen. The new product is being tested in Arizona and comes in three flavors: mocha, cinnamon and coffee.

Reynolds projects only about a 5 percent increase in can shipments over each of the next two years, according to Jeremiah J. Sheehan, vice president and general manager of the Reynolds Metal Can Division. This increase can be attributed to continued growth in the U.S. soft drink market and shifts by beverage producers from bottles to cans. Aluminum's share of the U.S. beverage can market in 1989 was 97 percent. During the first 8 months of '90, aluminum had a 92 percent share of soft drinks and a 99 percent share of beer. New interest in cans is also expected from Japan and Europe.

Charles G. Carson III, USS Division of USX Corp. (Pittsburgh) believes that the beverage industry still provides the most interesting oppor-

---

International Paper, Purchase, NY instituted a program to test the feasibility of recycling post-consumer paperboard milk and juice cartons. Twenty schools in Williamson County, TN are collecting used polyethylene-coated gable-top cartons. The cartons will be shredded and sanitized locally and then transported to a regional repulping center where the components can be separated into two streams for reuse. A key element of the program, according to Joseph Rimstidt, vice president, liquid packaging for International Paper, is that it eliminates the need for a local repulping facility. "By solving that problem, we expect to demonstrate that recycling milk and juice cartons makes sense in economic as well as environmental terms."

But where do consumers place the blame for the waste problem? According to the Roper report, Americans think everyone shares some of the blame for the problem. Sixty percent criticized companies for not developing environmentally-sound consumer products and bringing them to market. The same number of people also believe that certain technological advancements made by business eventually produce unanticipated environmental problems.

Seventy percent blame themselves for the problem, saying that consumers are more interested in convenience than in the environment. But over fifty percent say they are not willing to pay more for environmentally-friendly products. So, who is supposed to solve the problem? Institutions, not individuals, say the consumers. Yet, consumers don't think manufacturers will solve the problem unless they are forced by law to do so.

How much are consumers willing to pay for a "green product?" According to Roper, not a lot—at least, not yet. When asked about eight hypothetical "green products"—products identical to existing ones, but which would theoretically cause much less pollution—Americans are reluctant to make much of a financial sacrifice. On average, they would pay a 6.6 percent increase, not much more than the current rate of inflation. But one-third said they would pay nothing to help achieve recycling and environmental goals. Product quality remains high on the consumer's list, but very few people are willing to accept an inferior product to help the environment.

Disposable diapers	41%
Plastic packaging	38
Plastic bottles	29
Aerosol containers	28
Large items such as furniture and appliances	24
Aluminum cans/bottles	14
Glass bottles	13
Tin cans	13
Newspapers	11
Paper packaging	10
Wastepaper	6
Paper plates and napkins	5
Food scraps	3
Grass clippings/yard waste	3

Source: The Environment: Public Attitudes and Individual Behavior from The Roper Organization Inc., commissioned by S.C. Johnson & Son, Inc.

GLASS, METAL & PAPERBOARD

Industry data:				**percent change**	
Value of shipments[1]	**1988[2]**	**1989[2]**	**1990[3]**	**1988-89**	**1989-90**
Glass containers	4,457	4,592	4,721	3.0	2.8
Metal cans	10,972	11,634	12,115	6.0	4.1
Sanitary food containers	2,382	2,643	–	11.0	–
Product data:					
Value of shipments[4]	1988[2]	1989[2]	1990[3]	1988-89	1989-90
Glass containers	4,405	4,538	4,666	3.0	2.8
Metal cans	10,603	11,243	12,152	6.0	8.1
Sanitary food containers	2,109	2,340	–	11.0	–

[1] Value of all products and services sold by establishments in the cans, containers, and sanitary food containers industries.
[2] Estimate
[3] Forecast
[4] Value of products classified in the cans, containers and sanitary food containers industries produced by all industries.

Source: U.S. Department of Commerce: Bureau of the Census; International Trade Administration.

Shipments of glass, metal and sanitary food containers are showing only moderate growth. But with changing consumer attitudes, these markets may turn around.

tunities for steel. USX claims to have about 5 percent of the market and says steel has an advantage of about $5 per thousand of manufactured cans over aluminum. To upset the entrenched aluminum can market, a new can company, Bev Pak, was set up to produce about 1.7 million cans a year for soft drinks and beer. To gain market share, the steel industry will have to change consumer perspective about steel and concentrate on recycling, Carson told those attending FoodPlas '90.

Beer cans are experiencing only small growth because beer in glass bottles is more popular. And as a result of its upscale, premium image, glass shipments are starting to turn around. 1988 and 1989 were the first years since '86 that glass experienced growth, says DOC. When all the numbers are finally in for 1990, glass shipments are expected to be up.

According to Ann Estes, former senior market development manager, now liquor industry sales manager at Owens-Brockway Glass Containers, Toledo, Ohio, one food product found its way back to glass. *Ovaltine*, which was traditionally packaged in glass, actually lost market share when it converted to composite can. Estes thinks that these types of conversions are driven by economics, but they wouldn't have taken place if food company marketing departments feared loss of sales.

The Heinz 2½ oz. ketchup jar for use on room service trays is a recent innovation helping the glass market. Hotels want to present an upscale image which doesn't come across with foil bags. Frito-Lay also chose short, squat, wide mouth glass containers for its salsa. "It's easy for product development people to choose glass as a package for new products because of all the research already known about filling, capping and quality control procedures," Estes told an audience at last year's FoodPlas '90.

If resin prices decline, glass may lose market share. But beverage companies still have to watch out for public perception of what is recyclable and what isn't when deciding what type of container to use. Also, lower prices for plastic containers and easy access to resin may threaten the paperboard market, according to the *Outlook*. Heat-resistant ovenable paperboard trays and containers is where most of the growth will be for the paperboard market. Aseptic packaging is another potential growth area for paperboard. But in the U.S., aseptic packages are mainly used for fruit drinks and juices, and some milk. Milk applications are not as popular here as they are in Europe for two reasons: U.S. supermarkets have lots of space for refrigerated milk products, and consumers have the misconception that milk must be refrigerated because they are unfamiliar with the attributes of aseptic packaging.

It looks like manufacturers will have to stay tuned to see if convenience and recycling continue to dominant the food industry. ▲

CHILTON'S

MARCH 1991

FOOD ENGINEERING

SINCE 1928, THE SOURCE ON PROCESSING, PACKAGING, AND PRODUCT DEVELOPMENT

NEW PRODUCT ANALYSIS

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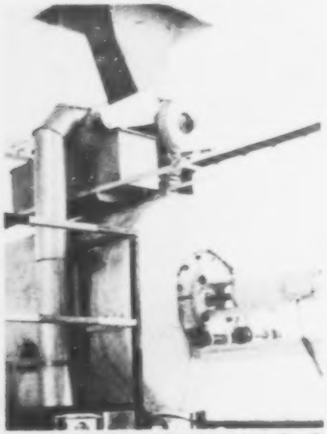
FOOD ENGINEERING

ABOUT THE COVER

The number of new products introduced last year—4,132—smashed all previous years' reports. The top food companies are still showing a lot a strength in a era of recession, according to *FE's* annual analysis.



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36 FDA Halts Cholesterol-Controlling Eggs
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New label technology can absorb 100cc of oxygen in a 24-hour period.

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Food processors are turning to cooking and frying technologies to produce food at less cost and, at the same time, to develop ways of eliminating fat and calories in those products.

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P&T Foods, situated in the quaint Belgian town of Hulshout, pioneered microwave-sterilized shelf-stable meals in barrier-plastic packaging: a four-item line of *Top Cuisine* pasta dishes with sauces containing meat and cheese, packaged in microwaveable barrier-plastic containers for shelf lives ranging from nine months to one year.

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JESSE H. NEAL
AWARD-WINNING
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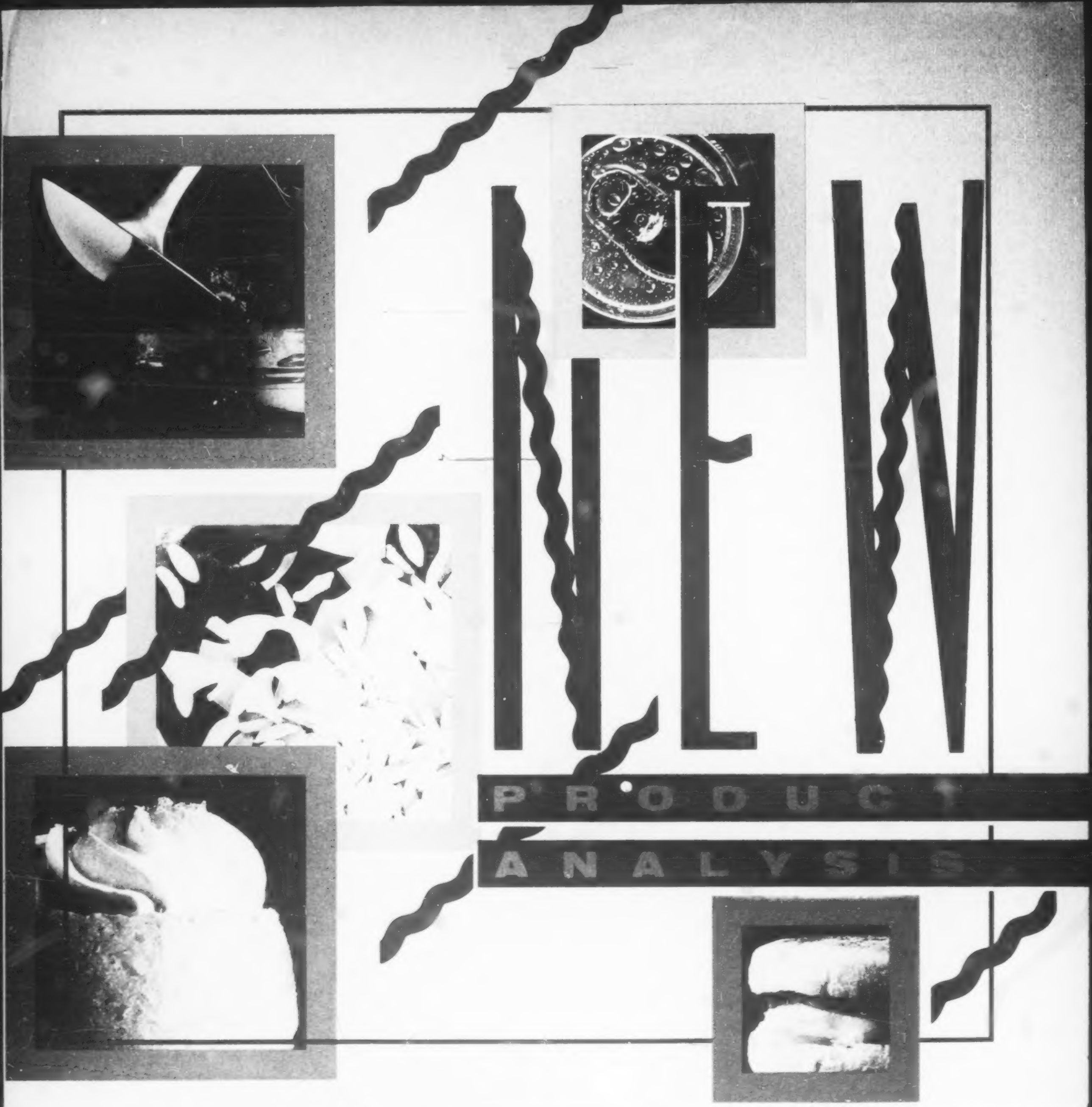
NEW PRODUCT ANALYSIS



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Food and beverage introductions in 1990 totaled 4,132, according to Marketing Intelligence Service, a product tracking firm based in Naples, NY. This tally smashed all previous New Product Analysis surveys reported by *Food Engineering.* Apparently, 1990 rumors of recession did not stem the tide of new food product introductions. And even with the recession now hard upon us, the introductions are not expected to stop, at least for another few months, according to Richard Lawrence, president of Marketing Intelligence.

Looking back "1990 was a surprising year," he said. "The first quarter was a continuation of the cautious pattern of the previous two years in which introductions were flat or down. It failed to signal the surge in food and beverage product introductions that started in the second quarter and pushed total new products to their highest ever."

1990 may indeed become a pinnacle year for new food and beverage introductions since it jumped ahead of '89 introductions by 16 percent; a stark contrast compared to '89's genteel increase of 1 percent over '88. The previous high occurred in 1987 with 3,581 food and beverage introductions.

Lawrence attributed the acceleration in new products to the financial strength of leading companies in the food and beverage industry—the ten top being responsible for close to 13 percent of new product launches. He added that Marketing Intelligence will be watching the top companies for any indication that the recession is putting a brake on introductions.

Existing brand names continued to take command of consumer awareness with 63 percent of the introductions being line extensions—either as new varieties, improved formulations, new sizes or featuring packaging changes. Less than one in five new products was introduced under an entirely new name.

While there were fewer true new products, 1990 can be called a *light* year. An echo of years past—light has

Food	Total Intros.	New Brand	Line Ext. W/in Brand	Other (i.e. New Package)	Total SKUs
Baby Food	10	5	0	5	48
Bread & Bread Products	142	67	1	74	348
Cake Mixes & Cake Frosting Mixes	24	7	–	17	52
All Other Baking Mixes	74	24	2	48	131
Catsup	14	5	–	9	24
Cereals	90	31	1	58	151
Cheese	154	67	–	87	463
Chewing Gum	32	6	–	26	75
Chips	78	29	1	48	172
Chocolate Candies	128	33	–	95	400
Non-Chocclate Candies	121	39	2	80	364
Cookies	178	48	2	128	440
Crackers	59	17	–	42	97
Dairy Substitutes	15	8	2	5	29
Other Non-Beverage Dairycase Products	14	8	–	6	18
Desserts	19	6	–	13	41
Special Diet Foods	66	28	–	38	144
Entree Mixes	13	6	–	7	37
Fish	47	12	–	35	135
Fruits	41	16	1	24	84
Ice Cream & Ice Cream Cones	180	89	5	86	600
Jams, Jellies, Marmalades, Sweet Butters	58	25	1	32	260
Margarine, Butter, etc.	21	5	1	15	32
Mayonnaise & Imitation Mayonnaise	14	1	–	13	20
Meals & Entrees	157	58	3	96	367
Meat Meals & Entrees	81	14	1	66	159
Fish Meals & Entrees	22	9	–	13	56
Poultry Meals & Entrees	77	6	–	71	146
Vegetable Meals & Entrees	6	5	–	1	39
Meat	76	30	–	46	181
Mustard	28	9	9	10	59
Non-Stick Surfacing Products	4	2	–	2	4
Nut Butters	16	4	1	11	32
Nuts & Seeds	53	21	–	32	171
Oil & Shortenings	47	17	–	30	80
Pasta Products & Combos	70	42	1	27	262
Pastry & Baked Products	100	40	3	57	314
Pickles, Relishes, Olives, Chutney, etc.	70	23	–	47	146
Popcorn	66	24	3	39	287
Poultry	52	15	–	37	148
Prepared Salads	13	9	–	4	51
Rice & Rice Combos	40	14	–	26	72
Salad Dressings	71	27	–	44	159
Salad Toppings & Dips	27	11	3	13	76
Spaghetti Sauces & Other Pasta Sauces, Pizza Sauce	41	15	2	24	73
Other Sauces, Gravies & Condiments	168	62	2	104	352
Savoury Spreads	29	14	–	15	90
Snack Bars	11	3	–	8	22
Other Snacks	131	51	3	77	284
Soup	64	17	–	47	180
Spices, Extracts & Seasonings	125	54	2	69	476
Staples	40	15	1	24	86
Sweet Toppings	61	24	2	35	147
Vegetable Protein Products	40	17	–	23	83
Vegetables	89	27	1	61	177
Yogurt and Yogurt Imitations	22	12	–	10	75
Total	3489	1273	56	2160	9019

Source: Productscan®, Marketing Intelligence Service Ltd.

become the food and beverage marketers' mantra. There are light sour creams, light cakes, light desserts, light ice creams—even light popcorn—a snack that never had a heavy image to begin with.

Health claims predominate in various forms: 15 percent of new foods and beverages claimed to have no or low cholesterol; 13 percent claimed no or low fat; and 21 percent said they were wholly or partly natural, according to Janet Mansfield, information center manager at Marketing Intelligence. These concerns beat convenience as a selling point, with only ten percent of the new introductions claiming to be microwaveable and five percent available in single-serve presentations.

Other areas that our editors focused on in the following pages include the upsurge of fast food clones in the microwaveable area; the splintering of microwaveable entrees into an adult and child market; explosive growth in rice and pasta; and bottled waters drinking up a flood of profits within the beverage segment. New food introductions have kicked off the decade with an impressive start.

	1989	1990
Philip Morris Co., Inc.	156	119
Campbell Soup Co.	51	48
Quaker Oats Co.	28	43
Unilever U.S., Inc.	47	43
Grandmet Consumer Prod.	32	37
Nestlé Holdings, Inc.	52	35
General Mills, Inc.	38	32
Procter & Gamble Co.	18	32
RJR Nabisco Inc.	46	31
Sara Lee Corp.	–	30

Source: Productscan®, Marketing Intelligence.

Food	Total Intros.	New Brand	Line Ext. W/in Brand	Other (i.e. New Package)	Total SKUs
Alcohol	33	16	0	17	46
Alcohol Beverage Substitutes, Low Alcohol	9	4	–	5	17
Baby Beverages	5	3	–	2	10
Beer & Ale	44	21	–	23	65
Beverage Mixes & Bases	26	9	–	17	67
Cocktail Mixes	15	6	1	8	28
Coffee	85	35	4	46	330
Fruit and Fruit Flavored	108	32	–	76	262
Health Drinks	13	6	–	7	20
Isotonic, Energy-Producing Beverages	27	12	–	15	59
Liqueurs	9	5	–	4	10
Milk & Non-Dairy Milk	37	15	–	22	75
Milk Additives	2	1	–	1	2
Mineral Water & Bottled Water	43	27	–	16	134
Miscellaneous Soft Drinks	59	23	1	35	106
Tea	68	33	–	35	221
Vegetable & Vegetable-Flavored	10	3	–	7	11
Wine & Wine Coolers	50	24	–	26	91
Total	643	275	6	362	1621

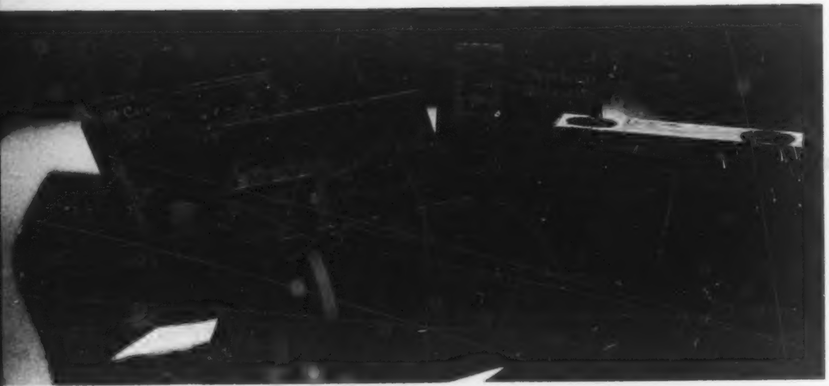
Source: Productscan®, Marketing Intelligence Service Ltd.

MICROWAVEABLE FOOD

The average American family uses its microwave 4.6 times a day, according to research conducted by the Campbell Microwave Institute. This trend has fueled the sales of microwaveable foods, forecasted to reach $4 billion in 1994. Following are several categories in which notable developments occurred in 1990.

Fast Food Clones: Clones in the form of frozen sandwiches, pizza and breakfast products accounted for 10 percent of the total microwaveable market. Sandwiches alone topped $300 million in sales for 1990, and there was considerable new product activity in the category.

Nearly one out of three frozen sandwiches sold was a hamburger or cheeseburger. One of the first manufacturers to gain recognition in this category, J. R. Simplot of Boise, ID, introduced a *MicroMagic Bacon*



Food from America's favorite restaurants—the fast food outlets—is duplicated for the home microwave.

Cheeseburger and *Patty Melt* to its lineup. Canada Packers is marketing *MicroMarvels Microwave Hamburgers* and *Cheeseburgers* in Canada. Like MicroMagic, the MicroMarvel line also features french fries and milkshakes. Bridgford Foods Corporation (Anaheim, CA) includes packets of ketchup and mustard with its *Bridgford Micro-Ready Microwave Hamburgers*.

Marketed as snacks, mini sandwiches continue to be very popular. Jimmy Dean Meat Company, which introduced *MiniBurgers* in 1988, unveiled *Ham'n Cheese* and *Chicken MiniBites* frozen sandwiches in 1990.

Today, more convenience stores have microwaves on the premises, allowing owners and managers to stock a variety of items. *Hot Pockets Super Deli Size* sandwiches by Chef America (Chatsworth, CA) are one example of this category and are available in Pepperoni Pizza, Beef and Cheddar, Ham n' Cheese and Turkey, Ham n' Cheese.

In an effort to resuscitate flagging sales, frozen microwaveable pizza manufacturers are now catering to the children of baby boomers, the first generation to grow up with frozen pizza. For example, *Chicago Brothers Pizza for Kids* (San Diego, CA) is an animal-shaped pizza with a blander sauce that caters to kids' preferences. And the *Teenage Mutant Ninja Turtles* are featured on McCain's Foods' new pizza boxes.

The frozen breakfast product market is estimated at $788 million and is still growing. New entries in 1990 include: *Weight Watchers Microwave Breakfasts* featuring sandwiches, coffee cakes and full breakfasts; *PitaStuffs A.M.* stuffed pita pocket sandwiches; and Oscar Meyer's *Zappetites* sandwiches and entrees.

Shelf-stable foods: Popcorn is the largest single category in the microwaveable foods market and it is continuing to grow. A study by FIND/SVP (New York, NY) shows popcorn accounting for $740 million and two-thirds of the total shelf-stable segment. Another dynamic segment is the prepared meal market, climbing 61 percent over 1989 sales. According to Peter Allen, FIND/SVP's vice-president of Market Research Reports, "the segment's entree market is in a state of flux as it begins to subdivide into adult/upscale and children's/downscale segments, with different formulations, packaging and marketing for each product group." (See Jan. *FE* p. 69-78.)

ConAgra (Omaha, NE) stepped into this arena by introducing *Healthy Choice* shelf-stable entrees, packaged in microwaveable cups (and cans). Flavors include Beef Stew, Lasagna with Meat Sauce and Spaghetti with Meat Sauce. Kraft General Foods changed the name of its *Impromptu* shelf-stable line to *Kraft Microwave Entrees*, coinciding with a change in the line's packaging to include a new recyclable tray. The popular *Lunch Bucket* line, introduced in 1987 by Dial Corp. (Phoenix, AZ), spawned the new *Light Balance* line. These 8.25 ounce tub-size servings contain about 220 calories and retail for $1.69. 99¢ buys a *Chef Boyardee Microwave Meal*, a 7.5 ounce serving of pasta and sauce manufactured by American Home Foods. Thomas J. Lipton Co. is targeting the lunch crowd with its *Hearty Ones* line. Add water and microwave for six minutes to make an 11 ounce serving of soup or pasta.

Healthy Frozen Entrees: Buoyed by the success of *Healthy Choice*, ConAgra expanded the line in 1990 to include forty frozen items. The com-

Our almonds make everyone's figures look better.

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A TASTEFUL PRESENTATION

Almonds are noted for enhancing the flavor of food rather than dominating it. Perhaps this is why consumers think products with almonds are so special. To them, almonds add taste as well as value to a product.

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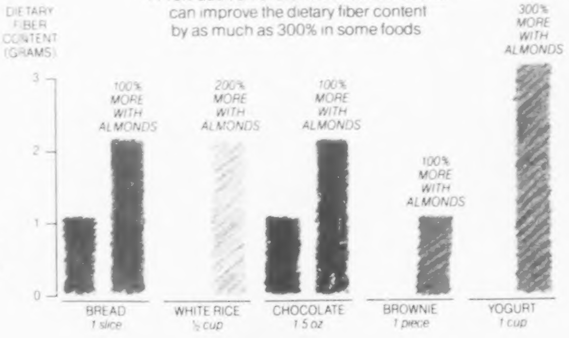

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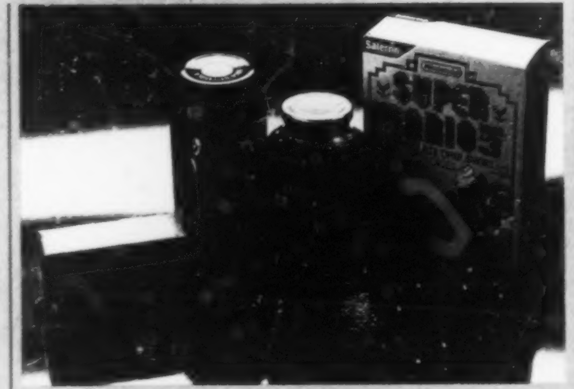
Circle 42 on Inquiry Card

Stars vie to 'do it my way'

Maybe you can't get Frank Sinatra to come out to sing at your block party, but you can bag ol' Blue Eyes at the supermarket now that he has *Sinatra's Sugo da Tavola* pasta sauce on grocers' shelves. Varieties include Marinara with Mushrooms, Milano Style and Tomato Basil with Parmesan. Celebrities can make lots of money by launching a line of food products—witness the success of Paul Newman's salad dressings, popcorn, lemonade, pasta sauce and who knows what's next. However, Newman donates his profits to charity, something Sinatra scoffed at in a press conference announcing the release of his pasta sauce.



James Darren joined the celebrity food fight with his own line of pasta sauce. And Phyllis George's *Pork by George* was added to the chicken line, *Chicken by George* that debuted in 1987.

Celebrity products are an outgrowth of products pitched by celebrity spokespersons, said Mona Doyle, Consumer Network, Philadelphia. (Companies such as Pepsi and The Gap have announced plans to withdraw their celebrity spokespersons campaigns, she said, since celebrities are equated with higher prices—something to be avoided in a recession.)

However, a celebrity's own product cuts through the clutter, she said, which is the first step in any successful marketing campaign. Doyle believes most celebrity products will weather a recession if they are marketed correctly, since consumers equate better quality with a star's good name.

Jocks are also playing up their celebrity by selling more than *Wheaties*. Bernie Kosar, quarterback for the Cleveland Browns, is the first National Football League player to kick off his own chocolate bar. The 2.25-ounce milk chocolate bar features a three-dimensional figure of the football star and retails for $1.25.

Finally, cartoon and video characters are breaking away from TV-land to pitch kid's favorite foods. Nintendo's Super Mario Brothers are now edible as cookies from Salerno. Ralston-Purina has unveiled *Teenage Mutant Ninja Turtles* (TMNT) and a *Jetson's* cereal. TMNT are also available as cookies distributed by Delicious Cookie Co. ConAgra has dubbed its line of healthy frozen dinners for children *Snoopy's Choice*.

As the sheer number of new products continues to propagate, savvy marketers have found that celebrities—both cartoon and real—are at least one way for a product to stand out from the pack.

pany also introduced *Dining Light* under the *Armour Classics* label as "budget-priced" entrees that are low in calories, cholesterol and fat. But a raft of companies have introduced their own healthy entrees, aiming for Healthy Choice's market share. Among them is Stouffer's (Solon, OH), whose *Right Course* entrees sport newly redesigned packaging to better identify the products as low-fat, low-cholesterol meals. Campbell Soup Co. (Camden, NJ) expanded its frozen meal line by introducing the *Eating Smart* entrees. In late 1990, Kraft launched *Eating Right*, a 12-item line of "special recipes for Healthy Eating™."

Consumer requests prompted reformulation of two previously existing lines. Stouffer's *Lean Cuisine* features reduced sodium contents—860 mg down from 1100 mg. *Weight Watchers*, a division of H.J. Heinz, significantly reduced the amount of fat and sodium in its entrees while promoting its *Personal Choice* program in TV campaigns.

It will be interesting to see how All American Gourmet Company of Orange, CA responds to criticism surrounding the new *Budget Gourmet Light* dinners. The line was blasted in a recent issue of a consumer newsletter for calling its Lasagna with Meat Sauce and Sirloin Salisbury Steak "95 percent fat-free." While the claims are true (they were approved by the USDA), the watchdog organization Nutrition Action noted that they were substantiated on a by-weight basis only, capitalizing on the fact that most of the weight in foods comes from water. Although each dinner may contain only 13g of fat, this actually translates to 40 to 45 percent of its total calories.

Kids' Meals: According to a study by the American Frozen Food Institute, American mothers allow their children to operate microwaves independently—38 percent allow 5 to 8 year-olds and 48 percent allow 9 to 12 year-olds to zap foods on their own. More children are preparing their own dinners and, at the very least, are making more choices about the foods they eat. This phenomenon has led manufacturers to create meals specifically for children. In 1990, cartoon characters were the rage. Tyson Foods (Springdale, AR) launched *Looney Tune Meals™*, a line of eight child-sized frozen meals retailing for $2.49. Wile E. Coyote™ Hamburger Pizza and the other entrees obtain no more than 40 percent of their calories from fat, based on American Academy of Pediatrics recommendations. Later in 1990, ConAgra introduced the counterpart to its adult-market *Healthy Choice* meals: *Snoopy's Choice* for kids. Each entree is low in fat and cholesterol, and is sodium-controlled. Toddlers are targeted for Gerber Foods' *Gerber Graduates*. This is the first use of tub packaging for children in this age group, the one to four year olds.

Refrigerated: This category has potential for growth yet large manufacturers are finding it difficult to succeed in test markets. Kraft General Foods' *Kraft Fresh* is now the only national brand left in this market since Nestlé pulled the *FreshNes* line in January. Distribution is a major problem: it is limited to a small geographic area because of the product's short shelf life and this is reflected in an escalated cost to the consumer. However, Peter Allen of FIND/SVP speculates that once manufacturers conquer cost and distribution problems, this category should shoot past the $150 million mark posted in 1990.

HEALTHY BEVERAGES

Despite some well-publicized contamination crises, the bottled water market grew 11 percent in 1990 to $2.6 billion, according to a study by FIND/SVP. Apparently, the recall of Perrier and others did not affect other bottled water brands. In fact, notes Peter Allen of FIND/SVP, "bottled water is the star of the beverage industry—it has been the fastest growing sector since the mid-1980's."

Imported water continues to be in vogue. Brands introduced now, however, will face Perrier's aggressive marketing campaign aimed at regaining category leadership. The French brand *Evian* is distributing *Ferrarelle Italian Sparkling Mineral Water*. The company markets it as a "table water" to be consumed much as a table wine would. Taking a different angle, Triple L Distributing Co. of Carson, CA promotes the mineral content of its *Voslau Naturally Sparkling Mineral Water* imported from Austria.

Even the new alcoholic beverages can sometimes be touted as "healthy" when compared to traditional spirits. In order to appeal to teetotalling

The fitness boom helped push sport drink sales to $475 million in 1990.

NEW PRODUCT ANALYSIS

baby-boomers, Seagrams Beverage Co. has developed *Taos*, a premium blend of sparkling spring water and wine. The product contains 5 percent alcohol and "splash" of flavor for a crisper taste than a regular wine cooler. Packaged in clear bottles, Taos also carries a premium price of $5.99 for a six-pack.

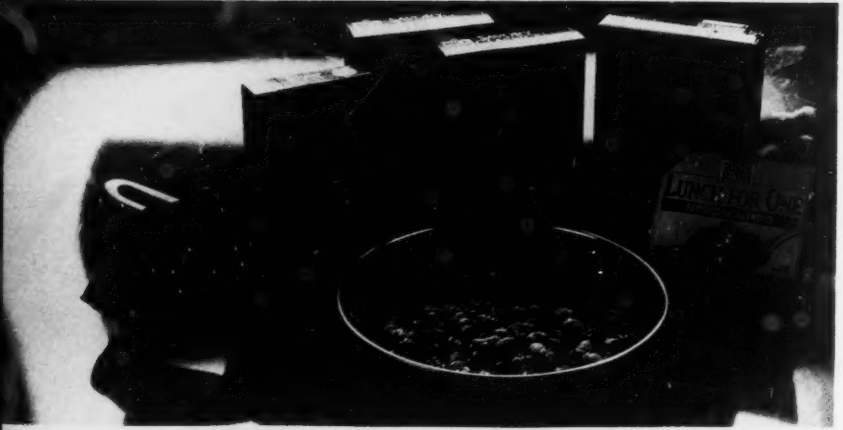
Another beverage segment showing tremendous growth is the energy drink market. Isotonic, energy-producing beverages totaled $475 million in retail sales in 1990. Marketing Intelligence Service of Naples, NY expects the energy drink market to grow at an annual rate of 15 percent over the next few years.

The venerable *Gatorade* brand, manufactured by Quaker Oats of Chicago, IL, still holds the number one slot, claiming 90 percent of the category share despite the introduction of many new beverages threatening its leadership. To protect its marketshare, Quaker introduced a flanker brand *Freestyle Sports Beverage* through its Stokely-Van Camp division, but has since pulled the product from test markets. Responding to suggestions that Gatorade and other isotonic sports drinks supplied unnecessary salt and sugar, Quaker also introduced *Gatorade Light*. This reduced calorie version of the original contains no fruit juice or caffeine, and is low in calories and sodium.

Expect heavy advertising from Dr. Pepper/Seven-Up promoting *Dr. Pepper's Nautilus*, a low calorie drink sweetened with 100 percent Nutrasweet and positioned to go head to head with Gatorade Light. Other soft drink giants have jumped into the fray with their sports drinks. With the introduction of Coca-Cola's *Powerade* and Pepsi's *Mountain Dew Sport*, the scramble for market leadership is reminiscent of the "cola wars."

Distribution in health clubs and health food stores has created a niche in the beverage market—the "peak performance" beverage. The Charlotte, NC-based company Proformance markets *Proformance Complex Carbohydrate Energy System Drink* to athletes looking to increase energy levels. The drink provides a source of complex carbohydrates and potassium but contains no sodium or artificial ingredients. Several specialty drink mixes containing unusual ingredients are available to those seeking the competitive edge. Among them: Vitasystem's (Mishawaka, IN) *Yakool Health Drink Mix* fortified with yogurt cultures; and *Energy Drink Mix* from Nutritional Specialties, Inc., made with bee pollen in a legume complex carbohydrate base.

RICE & PASTA



Explosive is a word that characterizes the growth of the dry rice and pasta dinner market, with category sales of $1.8 billion expected to jump to $2.4 billion by the end of 1994. While there are several factors accounting for the astounding growth of rice and pasta products, most significant is the relationship between prevailing economic conditions and sales

The widening gap between the rich and poor will drive the growth of rice dishes and pasta meal-extenders.

of these products. Consumers affected by economic downswings often turn to rice and pasta dishes for inexpensive yet nutritious meals. 1990 was no exception – prepared rice and pasta dinners reached sales of $430 million and $650 million respectively, according to a report prepared by FIND/SVP.

Economy and convenience are the hallmarks of the dry dinner market, originating with the Helper mixes introduced by General Mills (Minneapolis, MN) in 1973. Sales for meal-extenders reached $350 million in 1990, and are expected to grow to $500 million by the end of 1994, FIND/SVP's report stated. In 1990, General Mills introduced *Cheddar 'n Bacon Hamburger Helper* as an extension to the popular *Betty Crocker Hamburger Helper* line. The pasta-based mix boasts real bacon pieces and, like its previously-introduced counterparts, needs only the addition of hamburger to make a complete meal.

Another new *Betty Crocker* entry, *Space Adventure Hamburger Helper*, is a response to an increase in the under-15 population. Marketed specially for kids, this dinner features "space-shaped" macaroni in five varieties – pizza, macaroni, spaghetti sauce, beef and cheese. Another children's specialty product is riding the wave of current mania: Primera Foods (Denver, CO) is distributing *Teenage Mutant Ninja Turtles and Cheese Pasta Dinner*. The pasta is made from 100

[redacted]

It's 'fat city' for diet aid marketers

Weight-loss in America is more than a fad, obviously; but the method of choice has been subject to public whimsy. Today, trendy approaches to weight-loss focus on appetite suppressants, high-fiber food supplements and meal replacements. According to a study published by Business Communications Co. (Norwalk, CT), over-the-counter meal replacement products are one of the fastest growing segments (214 percent in 1990) of the $500 million diet aids market.

Thompson Medical's *Slim-Fast* and *Ultra Slim-Fast*, are the current market leaders. In 1990, the company introduced a water-mixable version and a ready-to-drink shake in a can to help retain its market share. Furthermore, Slim-Fast's ad budget swelled to $50 million in order to signal the company's expansion into frozen foods and snacks, manufactured in partnership with ConAgra and Borden. But *Dynatrim*, by Lederle Laboratories of Pearl River, NY, is mounting a $35 million marketing campaign to push Slim-Fast out of the number one slot.

Dynatrim
NEW
Dynatrim
Dynatrim
Dynatrim

The makers of Dynatrim hope to snare a large portion of Ultra Slim-Fast's market.

[redacted]

Other manufacturers are relying on their sucrose-free formulations to chip away at Slim-Fast (which contains table sugar) and its hold on the market. *California Slim*, manufactured by California Slim Foods, can be mixed with either milk or fruit juice. *Kal Slim & Firm*, from the Makers of Kal, at 20 calories contains a full day's supply of most essential nutrients. One product combines a sucrose-free meal replacement with an appetite suppressant: *Bikini Beverage*, manufactured by Country Life of Hauppauge, NY, contains Dahlulin, a complex carbohydrate said to prolong a feeling of satiety percent enriched durum semolina in the shape of each turtle hero.

Dry pasta dinners are not the only products to which marketers have lent support. The healthy, versatile image of rice is the reason for the plethora of new rice side-dishes. In fact, according to Marketing Intelligence (Naples, NY), rice introductions are now seven times greater than in 1980. *Uncle Ben's Rice* is the market leader in this category, with nearly three times the number (38 in the last ten years) of new entries over closest competitors Riviana Foods and General Foods' *Minute Rice*.

Heinz USA's (Pittsburgh, PA) new *Near East* rice mixes combine health benefits with an exotic appeal. An Oriental flavor is captured in *Soft Jasmine* rice, marketed under the *A Taste of Thai* label and distributed by Andre Proust (Old Saybrook, CT).

Continuing interest in ethnic and regional cuisine provides an opportunity for smaller manufacturers like Whisperwood Farms of Roswell, GA, who offers a *Jambalaya Rice Mix*. Peebles Duryee (Kingston, NJ) manufactures *Southern Creole* and *Provincial Herb Rice Blends*, as well as the unusual combination of *Blueberry Almond Wild Rice Blend*.

"Green" packaging has not posed much of a problem to rice and pasta manufacturers. Historically, these products have been packaged in paperboard cartons. But, as more dinners include microwaveable trays, this issue will need attention.

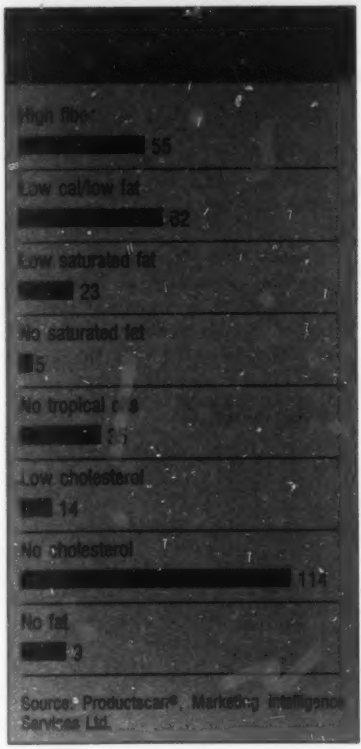
LIGHT BAKERY

Of the 577 new bakery products launched in 1990, 279 (48.4 percent) in 671 varieties (SKUs) were positioned as "healthy," up from the 202 "healthy" bakery products introduced in '89. Breakdown: bread and bread products, 99; pastries, 53; cookies, 83; crackers, 42; specialty baked snack and diet foods, 2. Only half as many new "high fiber" bakery products appeared in 1990 (55) as in '89 (113), but most combined fiber with fat reduction to proclaim several perceived health benefits, and many moved beyond oat bran and wheat bran into new fiber sources. Examples:

- Rice-bran breads from *Roman Meal*, *Country Hearth* and *Orowheat*, plus *Fiberlife* rice-bran bread from DCB.
- Corn-bran breads: *Sunlite*, from J. R. Short Milling Co.; *Northridge*, from Orowheat.
- Breads containing synergistic blends of brans, such as *Hollywood Fitness Blend* (soy, corn, rice and wheat brans), licensed by National Bakers Services; *5 Bran Bread* (rice, oat, corn, wheat and barley brans), from Continental Baking Co.; *Brownberry Country Bran Light Bread* with five brans and only 40 calories per slice, from Arnold Foods; *Smart Slice Fitness Recipe Bread*, low in sodium and 96-percent fat-free with four brans, no cholesterol and 50 calories per slice, from Continental.

The "lite bread" trend launched with white bread in '89 continued last year with line extensions by bakers such as Freihofer, Continental, Interstate and Arnold into variety breads such as rye, oat bran, and wheat containing only 40 calories per slice. Several were positioned as high in fiber, low in fat and cholesterol-free. Rainbo and Colonial (both divisions of Anheuser-Busch) aimed at both children's tastes and mother's nutritional concerns with *Ironkids Bread*, whole-wheat bread with the taste and texture of white bread yet high in vitamins and fiber and cholesterol-free.

Sara Lee introduced two low-calorie frozen dessert lines: single-serving *Sara Lee Lights* in eight varieties, low in cholesterol and with no tropical oils; and *Sara Lee Free & Light*, a seven-item line of pies, cakes, muffins and Danish plus a yogurt dessert, positioned as 98-percent fat-free, cholesterol-free, low in sodium and with one-third fewer calories than their conventional counterparts. Drake



Source: Productscan®, Marketing Intelligence Services Ltd.

Bakeries unveiled three varieties of *Light & Fruity* coffee cakes, 97-percent fat-free with one-third fewer calories and no cholesterol or tropical oils. Continental introduced *Hostess Breakfast Lights* cinnamon-crumb cakes, cholesterol-free and 97-percent fat-free. Entenmann's, however, won the fat-reduction race by introducing a line of *fat-free* cakes and cookies with 100 calories per serving.

Of the 83 "healthy" cookie items introduced last year, 33 were tagged "no cholesterol," 14 "no tropical oils." *Sprinkled Chips Ahoy* from Nabisco are tagged with both. Keebler's *Mini-Middles* are low in saturated fat with no cholesterol. Most unique cookie of 1990: Health Valley *Fat-Free Jumbo Fruit Cookies*, sweetened with fruit and juices with soluble and insoluble fibers from 15 different sources.

LIGHT DAIRY

Sixty-four "light/lite" cheese products were introduced in 1990, up from 24 in '89. A representative sampling is shown above. (Source: Wisconsin Milk Marketing Board.)

Of the 445 new dairy products (914 SKUs) launched in 1990, 303 (68 percent) were positioned as "light" or "healthy," more than twice the 130 "light" dairy products unveiled in 1989. Breakdown: milk, 31; cheese, 80; ice cream/frozen desserts, 131; butter, margarine and blends, 20; yogurt, 19; dairy substitutes, 10; sour cream/dips, 12.

According to *U.S. Industrial Outlook 1991* (Dept. of Commerce), ice cream and frozen-dessert shipments rose 7.5 percent in 1990 but per-capita consumption of ice cream dipped 0.6 percent as more consumers shifted to low-fat alternatives. Kraft General Foods (KGF) late in '89 launched *Sealtest Free*, the pioneer "nonfat ice cream," and competitors waited to see if KGF could get away with it. But as soon as KGF repositioned the product as a "nonfat frozen dairy dessert" to comply with FDA standards of identity (which define ice cream as 10 percent milkfat), competitors followed with similar products. NutraSweet introduced *Simple Pleasures*, based on its *Simplesse* fat substitute; Eskimo Pie unveiled *Fat Freedom*, the first frozen novelty to incorporate Simplesse; Borden, Dean, H.P Hood, Superior Dairy and Safeway (*Lucerne*) quickly introduced nonfat frozen dairy desserts; KGF followed-up its initial success with *Sealtest Free* nonfat frozen-dessert bars. Gold Bond (Unilever) introduced *Fudgsicle Fat-Free* bars.

Per-capita consumption of frozen yogurt (in most cases a semantic evasion of FDA standards because few brands contain active yogurt cultures) soared 45.4 percent, according to *Industrial Outlook*. Fifty-one new lowfat frozen-yogurt products appeared in 1990. Most unique were the *nonfat* varieties. Examples: Elgin Honey-Hill's *Bee-Lite*; KGF's *Sealtest Free* nonfat frozen yogurt; *White Clover Dairy* fat-free frozen yogurt *with* active cultures.

Lowfat/nonfat cup yogurt introductions declined from 27 in '89 to 18 last year. Yoplait USA (General Mills), Kemp's (Wessanen USA), Bison Foods (Upstate Milk Cooperatives), Kraft (*Light n' Lively Free*), Penn Maid and Dannon all unveiled nonfat yogurts in a wide range of flavors. Three others were actually yogurt substitutes. Example: *SoyaLatte* "non-dairy yogurt" (no cholesterol or lactose) from Soyeh Natural.

Lowfat/low cholesterol cheese introductions grew from 24 in '89 to 64 in 1990. (Another 16 new cheese products were positioned as low in sodium or with "no preservatives.") Cheesemakers gained confidence in marketing lowfat Cheddars: 20 were launched last year (not including spreads or imitations), up from only four in '89. Schreiber Foods launched *Lifecare* in five varieties including Cheddar, all with one-third less fat and half the cholesterol of full-fat cheeses. Weight Watchers (Heinz) unveiled part-skim Sharp Cheddar, Jack and Colby with 40 percent less fat, and Swiss with 35 percent less fat. *Holland Farm* reduced-fat Farmer cheese from White Clover Dairy has 44 percent less fat than most Cheddars. Most innovative process cheese of 1990: *Kraft Free Singles*, a *no fat*/low-cholesterol version of *Kraft Singles* with only half the calories. French cheesemakers introduced lowfat Chevre, Emmenthal, Brie and Boujolais to the U.S.

"Extra light" milk with 1 percent milkfat, positioned between 2% and skim, was introduced by most California dairies and elsewhere by processors such as H.P. Hood, Superior Dairy and Dean's. ▲

[redacted]

Sweet Treats—Even Pasta

Gourmet indulgences offer consumers a sweet and inexpensive break from the pressures of economic rough times. Although there is no official tally of gourmet indulgence consumption, shipment of candy products according to the U.S. Industrial Outlook rose 6.7 percent to $9.1 billion—much of which is being bought by adults.

Consumers often retreat from the battle of the bulge to indulge in a gourmet adventure. Perhaps one of the most unusual gourmet indulgences are made by a Richland, WA-company that is turning heads by offering pasta for dessert. Pasta Mama's offers over 30 varieties of freshly-dried pastas in varieties such as jalapeño, chocolate, Cafe Irish Creme, blueberry, raspberry, walnut, cinnamon-nutmeg and cranberry.

"Dessert pastas are treated like a crep̂e," said Paul Santillie, who co-owns Pasta Mama's with his wife, Diane. The dessert pasta can either be topped with fruit and cream or sweet sauce mixes that are sold separately. The Santillies started their business from a weekend hobby which went full time in 1986. Sales totaled $2 million in 1990 and the pastas are distributed nationally.

Pasta takes on a new twist as a crêpe-like dessert created by a Richland, WA company.

[redacted]

Another gourmet indulgence is the perennial favorite—chocolate. Come hell, high water or even the rumor of recession—shipments of chocolate remain bouyant as consumers in 1990 continued to take solace in a relatively inexpensive treat. Chocolate candies comprise a little more than two-thirds of confection sales and consumption of chocolate candies increased 3.2 percent to 2.8 billion pounds in 1990.

Chocolate and consumers' other great passion, champagne, uncorked *Peel & Pour Chocolate Covered Champagne* by Tomfoolery Serious Chocolate Co. Varieties include milk, dark or white chocolate.

Hershey Foods has positioned a new chocolate candy to compete with Godiva at the price of a Hershey bar. *RSVP* is filled with caramel and chocolate cream and is packaged in a 1.2 ounce gold-edged box.

Chocolate showed up in more than half of Kraft General Foods' (KGF) *Fresh Creations Refrigerated Desserts*, a line that replaced the former *Chillery* line in test markets. Varieties include: White Chocolate Swirl Cheesecake, Pecan Torte, Chocolate Chocolate Chip Cheesecake, Dutch Apple Pie, Caramel Crunch Brownie, Fudge Brownie and Carrot Cake.

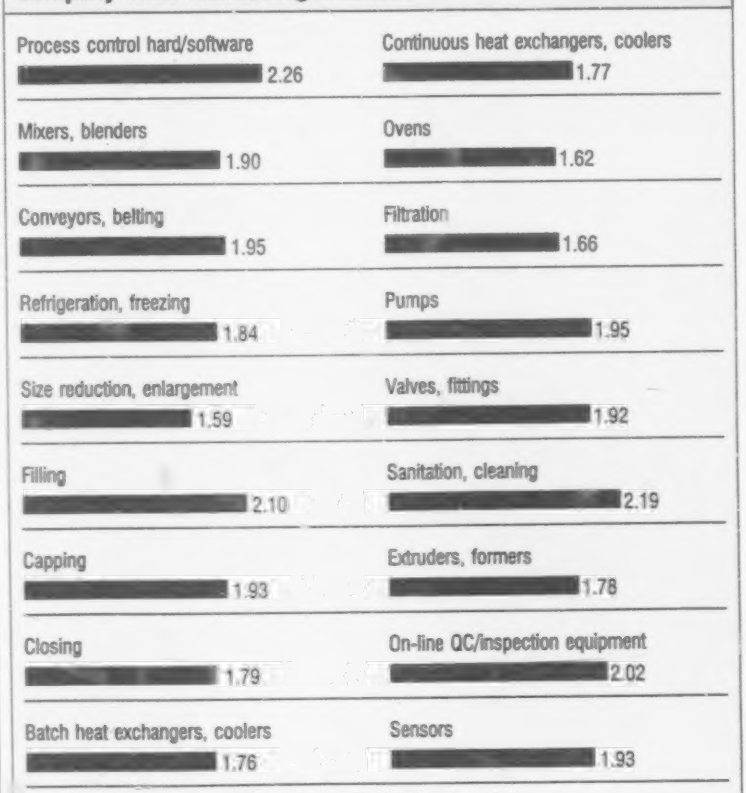
While it is true that consumers continue to shop for light products, it is also true that they often reward themselves with indulgent treats like chocolate and cake. Many in the food industry recognize this and are going to great efforts, as the preceding examples show, to make the occasional indulgence well-worth the expended calories.

1991
EQUIPMENT BUYERS SURVEY

Process control and sanitation continue to top the list of equipment purchasing priorities. Needed: better sensors and on-line analysis.

CHARLES E. MORRIS
MIDWEST EDITOR

Company-Wide Purchasing Priorities



Low Priority = 1; Some Priority = 2; High Priority = 3

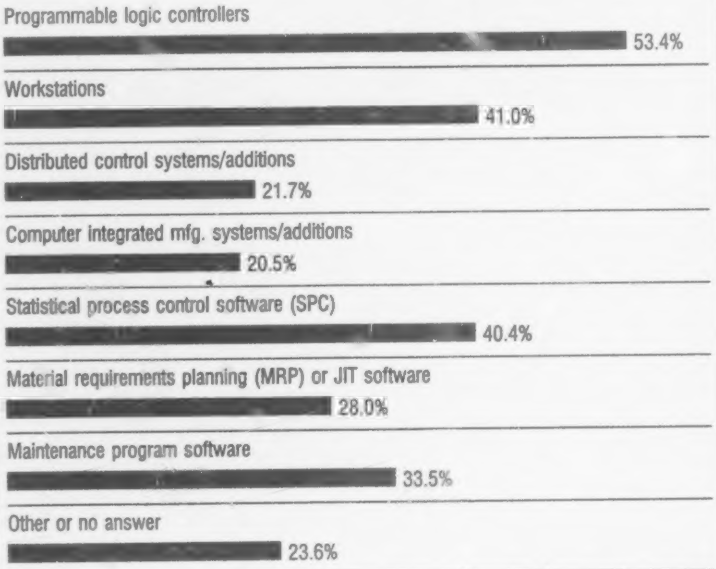
Source: Food Engineering's Process Equipment Buyers Survey 1991.

Most economic gurus predicted recession in 1991, but they didn't talk to *Food Engineering's* Executive Advisory Panel.

Fully 80 percent of the respondents to *FE's* 1991 Process Equipment Buyers Survey forecast increased production for their companies in 1991, and 11 percent more envision at least the same production level as 1990. Production increases don't necessarily translate into sales and profit increases, of course, but they certainly stimulate purchasing activity.

The panel reflects a cross-section of food-industry executives in top management, R&D, production, purchasing, engineering, quality control, packaging and marketing. Of 234 respondents to the survey, 29.1 percent said their firm's production would soar by more than 10 percent in '91; 32.1 percent forecast increases of 6 to 10 percent; 18.8 percent see produc-

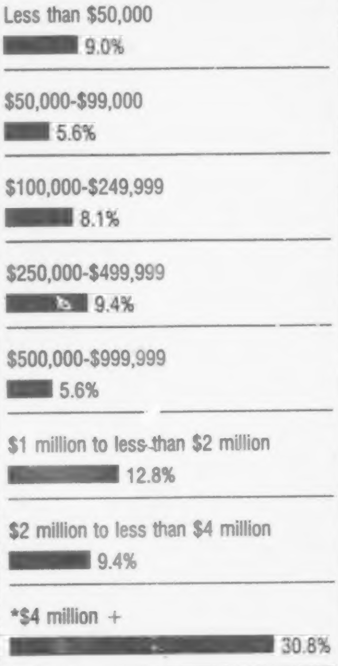
Location Process Control Purchases (planned)



Note: Total of numbers shown may be more or less than 100% due to multiple answers or no response.

Source: Food Engineering's Process Equipment Buyers Survey 1991.

Company-Wide Budgets for Equipment Purchases



*For companies with 500 or more employees, the percentage is 54.2.

Note: Total of numbers shown may be more or less than 100% due to multiple answers or no response.

Source: Food Engineering's Process Equipment Buyers Survey 1991.

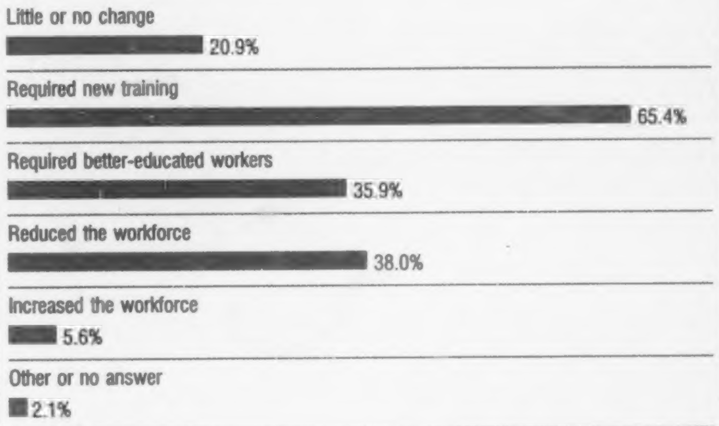
tion up but less than 6 percent; and 10.7 percent expect production levels to be about the same as last year.

Only 9 percent predicted declines: 4.3 percent see production down by less than 6 percent, 1.7 percent project slumps of 6 to 10 percent, and one real pessimist forecasts a free-fall of more than 10 percent. Seven respondents (3 percent) said their plants will shut down this year, reflecting some continuing consolidation of the industry. The survey was taken, however, before the outbreak of The Gulf War, which initially sent stock-market and oil prices following the trajectory of every Scud. At this writing the impact of the war was uncertain—and business does not thrive on uncertainty—but the overall trend of oil prices and interest rates was down and that of the Dow Jones up, perhaps restraining real recession until the bills for Saddam and the S&Ls come due.

Bigger budgets forecast

Companies seem to be backing up their optimism with bigger equipment budgets. Last year, 24.8 percent of respondents said their companies were budgeting more than $4 million to purchase production, packaging and process control equipment. This year, 30.8 percent projected company equipment budgets of more than $4 million. Over half of these are firms with more than 500 employees, but nearly 40 percent of them are midsize companies with 100-500 employees.

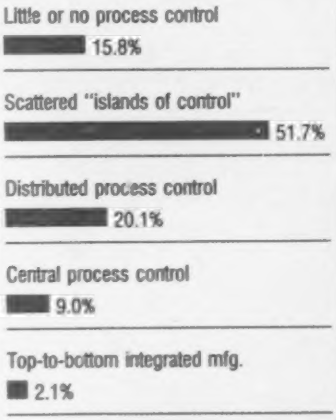
Impact of Automation on Workforce



Note: Total of numbers shown may be more or less than 100% due to multiple answers or no response.

Source: Food Engineering's Process Equipment Buyers Survey 1991.

Company-Wide Automation Estimate



Note: Total of numbers shown may be more or less than 100% due to multiple answers or no response.

Source: Food Engineering's Process Equipment Buyers Survey 1991.

Process control top priority

Purchasing priorities closely parallel those of last year's survey, with process-control hardware/software taking top priority. As part of the survey, *FE* asked the panel: "Where is it most important for your company to invest in future automation/process control?" Answers ranged across the entire spectrum of operations—batching, blending, conveying, weighing, filling, packaging, CIP and energy control were most often cited—but included some thoughtful and provocative responses:

- "In our people—this is the limiting factor in our ability to grow and meet new and existing challenges," said the corporate engineer at a breakfast-cereal company.
- "To supply as much process information as possible to operators so they can take full advantage of SPC [statistical process control]," said the process-engineering manager at a potato-products manufacturer.
- " 'Automation' is not always good, especially if overdone," observed a researcher at a major dairy-products company. "We find that employees become 'robotized' and lose touch with the actual process. We might de-automate slightly to re-involve the operators."
- "Forecasting, scheduling and preventive maintenance," said the industrial-engineering manager at a major meat-processor, zeroing in on three key software applications.

Others interpreted the question in terms of benefits expected. Quality assurance, product consistency (standardization), increased capacity, improved efficiency and cost reduction were most often cited.

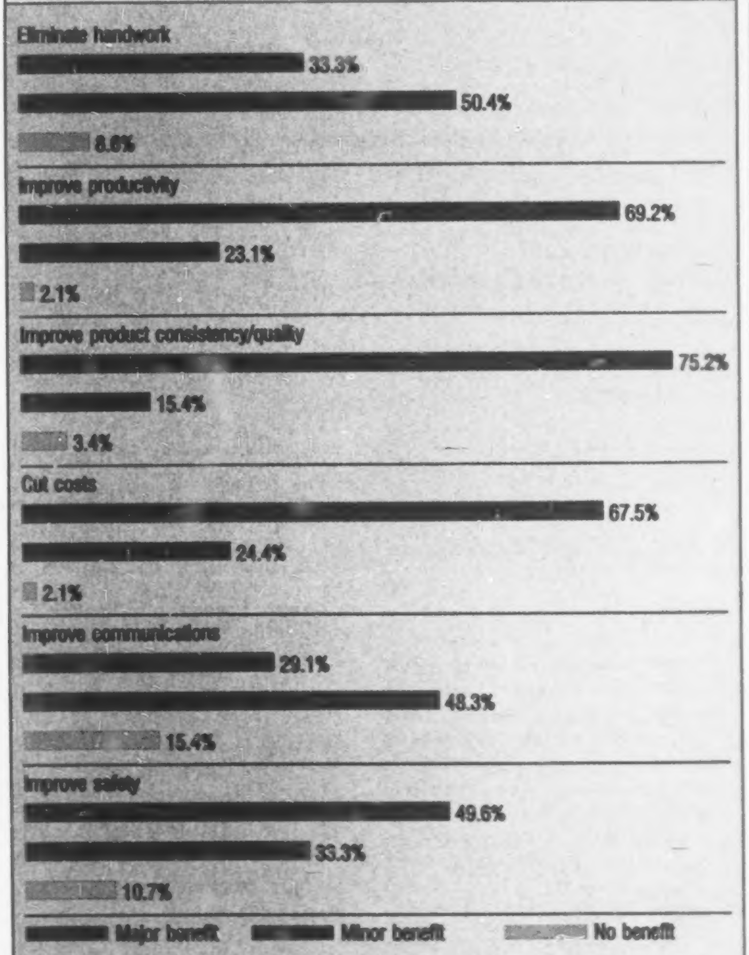
Some respondents from large, multi-plant companies answered the question in terms of integration and communications. "Expanding existing technology to all company locations," responded the packaging-engineering manager of a vegetable-oil products company. "Networking PLCs," said a project manager for a cookie/cracker baker. The technical-services director of a company producing both ingredients and finished foods observed that "we need better control/uniformity from our sister divisions which supply us with ingredients and packaging materials, [so] we need to do a better job of communicating our needs to them."

The project-engineering manager at a diversified foods manufacturer summed it up: "Integrated control systems covering the business."

Sanitation critical

Sanitation/cleaning equipment ranks second in corporate purchasing priorities. Slightly more than half (51.7 percent) of respondents rate their plant-sanitation levels as "excellent," while 44.9 percent concede that plant sanitation is "adequate, but needs improving." To improve sanitation, 61.1 percent believe that plant design must be modernized, 41.9 percent cite "more CIP" and 26.1 percent named "new equipment." Nearly 55 percent of respondents report that their companies have HACCP programs in place; 8 percent plan to initiate HACCP this year. HACCP isn't limited to the larger companies: 57

Expected Impact of Automation on Company



Note: Total of numbers shown may be more or less than 100% due to multiple answers or no response.

Source: Food Engineering's Process Equipment Buyers Survey 1991.

percent of respondents from firms with 500-plus employees have HACCP, as do 50 percent of respondents from firms with fewer than 100 people.

Sensors & on-line analysis

Several respondents cited sensors and sensor development as the most important area for investment in future automation, and this perception was confirmed in several answers to *FE's* second question: "What production equipment would you like to see that is not now available from any supplier?"

- "On-line sensors for...viscosity, particle size, physical/chemical attributes."
- "On-line density measurement of ice cream."
- "A low-cost, high-accuracy mass flow-control system."
- "A reliable and accurate on-line moisture analyzer for dry solids."
- "Wear-resistant temperature, pressure and moisture sensors."
- "Real-time sensors to critically adjust ingredient additions on continuous-process equipment."

As shown on the adjoining graph, sensors and on-line quality-inspection equipment rank high among corporate purchasing priorities.

Flexibility & high tech

Several respondents to *FE's* second question stressed the need for flexible equipment. Examples:

- "Equipment that can handle a wide spectrum of textures, densities and particle sizes with excellent accuracy and gentle action."
- "High-speed, versatile and quickly changed-over packaging equipment."
- "Equipment that allows fast changeover between products and package sizes."

Others cited needs for high-speed robots on multi-product lines, automatic case-packers for flexible packages, and improved cross-flow membrane-filtration systems offering more throughput with less cleaning and maintenance.

Two respondents put continuous microwave-sterilization systems on the "wish list" (see "Processing & Control section," this issue). But the greatest technological challenge was posed by the new-product development manager at a seafood packer: "A continuous dielectric system for processing canned food in the can, providing superior taste due to HT/ST heat treatment." ▲

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FOOD ENGINEERING

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FOOD ENGINEERING

ABOUT THE COVER

Managing a new plant construction project or retrofit is no easy task. But good management is essential to a successful project and improving the plant's bottom line. Photo: Tropicana Plant courtesy of Sverdrup.

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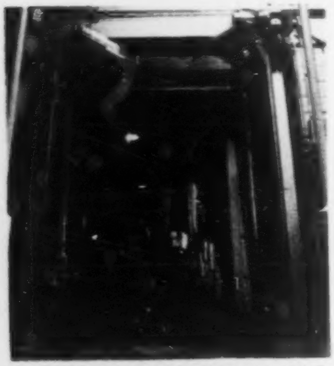

SPECIAL EMPHASIS

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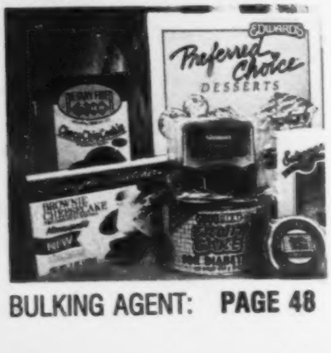

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JESSE H. NEAL
AWARD-WINNING
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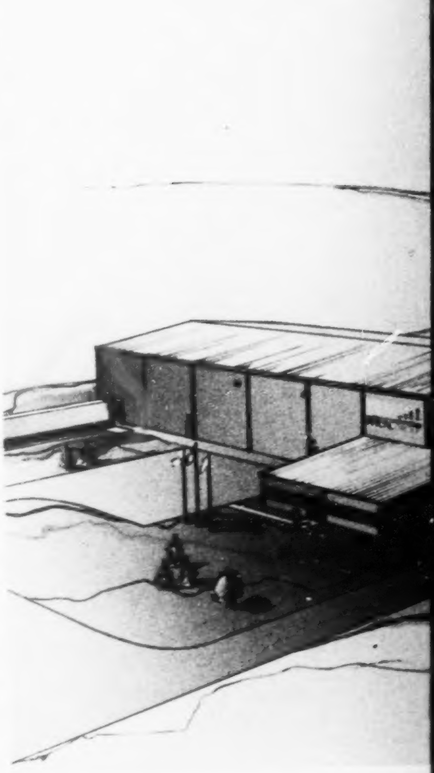
14th ANNUAL NEW PLANT CONSTRUCTION SURVEY

Entrepreneurs break ground in food plant construction survey.

PATRICIA DILLON
SENIOR ASSOCIATE EDITOR

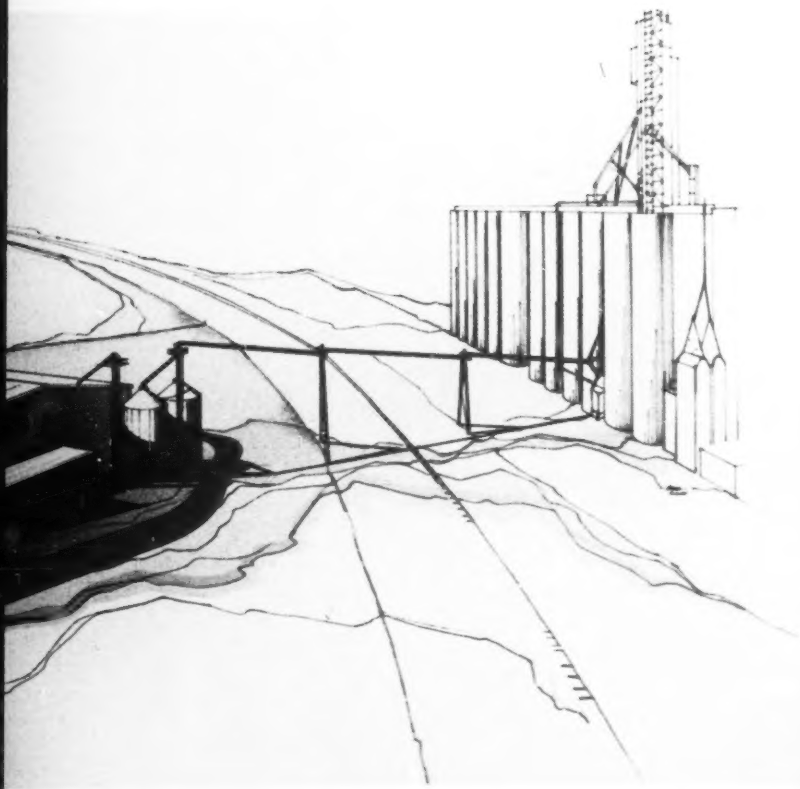


Food Engineering is breaking with tradition by publishing our widely-read annual new plant survey in April rather than in November. However, next year's survey will take in all of 1991. As in past years, our current results pooled information from Conway Data, Inc., Norcross, GA and mailed surveys we sent to architectural/engineering firms.

A total of 202 projects were either built, expanded or renovated during the six month period from July 1 to December 31, 1990. Just over half were renovations, continuing a small but noticeable trend towards renovation, a response to the recessionary climate.

Specialty and ethnic foods, many of which had humble beginnings, made impressive inroads into mainstream food manufacturing. Some entrepreneurs literally breaking ground to

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employees	Architects/ Engineers	Status & Date
				A				
A.M. Gilardi & Sons	Oklahoma City, OK	Frozen pizzas	New	65	–	170	–	–
Adair Foods Co.	Kirksville, MO	Ham products	Exp.	40	3	100	–	–
Adolph Coors	Burley, ID	Barley storage	Exp.	–	–	7	–	–
Albertson's Inc.	Brea, CA	Grocery	Exp.	123.5	–	–	A. Epstein & Sons, Int'l.	–
Allen Canning Co.	Turkey, NC	Canned vegetables	New	200	–	60	–	–
Ambrosia Chocolate	Milwaukee, WI	Chocolate	New	320	93	350	Jones Group Lockwood Greene Davy McKee	Comp. 6/92
America's Catch	Itta Bena, MS	Catfish	New	–	1	–	–	–
American Home Foods	Milton, PA	Food	New	–	20	–	–	Comp. Winter
American Italian Pasta Co.	Excelsior Springs, MO	Pasta	Exp.	--	–	50	–	–
Americold	Tomah, WI	Refrig. warehouse	New	110	–	–	Stellar Group	–
Anheuser Busch	Tampa, FL	Beer	Exp.	47	45	49	Lockwood Greene	Stup.
Anheuser Busch	Cartersville, GA	Beer	New	860	250	500	MK-Ferguson	Const. 3/92



build new plants: Ruiz Foods won recognition from the Reagan administration as exceptional minority entrepreneurs; Mama Tish Italian Specialties' 23-year old president Andy Zahn bought the firm in 1989 with annual sales of $800,000 and now boasts of sales over $7 million; and Ms. Desserts, a company founded by Dean Kolstad who later went into partnership with Gary and Jeff Peisach to make its first gourmet desserts in the kitchen of a college frat house. These success stories illustrate that the food industry is not exclusively the domain of gargantuan conglomerates, but a proving ground for upstarts who can make their mark by building their own food plants.

In the final column of the following tables, project status and dates are coded as follows: Plng. (site selected but construction not yet underway); Const. (construction underway); and Stup. (actual or projected startup date). ▲

Nichii Co. is building a soybean flake processing facility in Jefferson, IA. (Source: Austin Co.)

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employees	Architects/ Engineers	Status & Date
Anheuser Busch	St. Louis, MO	Exp.	259	–	259	–	MK-Ferguson	Cont.
Anresco Inc.	San Francisco, CA	Exp.	3	–	25	–	–	Stup. March
Assoc. Grocers	Miami, FL	Exp.	80	–	–	–	Stellar Group	–
Archer Daniels Midland	Champaign, IL	Masa (corn prod.)	Exp.	50	–	40	–	–

B

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employees	Architects/ Engineers	Status & Date
B.C. Rogers Processors	Morton, MS	Poultry	New	–	–	550	–	–
Bakeline, Inc.	Des Plaines, IA	Warehouse	Exp.	115	5		A. Epstein & Sons, Int'l.	–
Bama Foods	Tulsa, OK	Bakery prod.	New	135	40	100	Lockwood Greene Webber/Smith	Comp. 7/91
Barber's Dairies	Birmingham, AL	Milk	New	40	–	–	Webber/Smith	Stup. March
Beatrice/Hunt-Wesson	Memphis, TN	Vegetable oil & shortening	Exp.	–	1.1	50	–	–
Ben & Jerry's	Springfield, MA	Ice Cream	New	35	–	–	Webber/Smith	–
Beverage Concepts	Saint Louis, MO	Wine & beverages	Exp.	–	1.5	25	–	–

NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employ-ees	Architects/ Engineers	Status & Date
Big Bear	Wapakoneta, OH	Groc. dist.	New	500	–	–	Hixson	–
Blue Bell Creameries	Brenham, TX	Ice cream	Exp.	21	–	–	–	Comp. Spring
Borden	Texas	Milk	Exp.	12	–	–	Hixson	–
Borden	Cape May, NJ	Seafood	New	58	15	–	Hixson	–
Borden	St. Louis, MO	Pasta hyperplant	New	–	50	200	–	Comp. '92
Borden	St. Louis, MO	Foodservice	New	–	20	400	–	Comp. '92
Borden	Chambersburg, PA	Foodservice	New	400	25	–	Ruscilli Const. Jacobs Engr.	Comp. '91
Bruno's Inc.	Birmingham, AL	Dist. ctr.	Exp.	365	–	–	Food Plant Engineering	Stup. March
Burris Refr. Serv.	Chesapeake, VA	Warehouse	New	300	–	–	Stellar Group	Comp. July
C								
C&C Meat Sales	Upper Marlboro, MD	Meat dist.	New	18	–	50	St. Onge, Ruff & Assoc.	Stup. 11/90
Camino Real Foods Inc.	Lancaster, PA	Froz. burritos	New	65	10	72	Kajima Int'l.	Comp. Aug.
Campbell Soup	Camden, NJ	Soup	Exp.	90	24	–	MK-Ferguson Sigel Group & Ballinger	Stup. March
CapriSun	Granite City, IL	Soft drinks	Exp.	24	3	–	–	–
Cargill	Dodge City, KS	Beef slaughter	Exp.	–	–	–	–	Comp.'91
Cargill	Jacksonville, FL	Poultry	Exp.	–	8.3	–	Haskell Co.	Comp. '92
Cargill	Fort Morgan, CO	Beef slaughter	Exp.	–	24	200+	–	Comp. '92
Cargill	Memphis, TN	Oil	New	–	–	–	–	Comp. '91
Cargill	Schuyler, NE	Beef slaughter	Exp.	–	–	–	–	Comp. '91
Cargill	Stockton, CA	Flour	New	–	–	–	Younglove	Const.
Carnation Company	Danville, VA	Pasta & sauce	Exp.	–	20	–	–	Comp. Spring.
Carnation Company	Modesto, CA	Evap. milk	New	125	–	60	–	Stup. Sept.
Cinpac	Cincinnati, OH	Prepared meals	Conv.	180	–	–	Hixson	Const. June
Clements Foods Co.	Oklahoma City, OK	Condiments	Exp.	25	–	15	–	–
Clover Stornetta Farms	Petaluma, CA	Milk	Exp.	40	–	22	–	Comp. March
Club Chef	Cincinnati, OH	Produce	Exp.	–	–	–	Hixson	Const. June
Coca-Cola	Jackson, TN	Soft drinks	New	45	–	–	–	–
Coca-Cola	Central Florida	Juice concentrate	Exp.	32	–	–	Webber/Smith	Stup. Dec.
Coca-Cola	Milwaukee, WI	Soft drinks	New	368	–	40	–	Comp. June
Coca-Cola	Sacramento, CA	Dist. ctr.	New	303	–	–	Food Plant Engineering	Stup. Nov.
Cole Grains (Nutrix)	Muskogee, OK	Dog/cat food	Exp.	–	–	100	–	–
Colonial Sugar	Gramercy, LA	Molasses	New	–	–	–	PSI	Comp. 8/90
Columbia Foods	Columbia, MO	Sausage	Renov.	60	–	–	Sverdrup	Stup. May
Complete Pkg. Service	Austin, MN	Wet & dry pak	New	100	2	60	–	Comp. Feb.
Continental Freezer	Chicago, IL	Froz. dist.	Exp.	86	–	–	Webber/Smith	Comp.
Coors Brewing Co.	Memphis, TN	Carbonated juice	Exp.	–	90	–	–	–
Coors Brewing Co.	Memphis, TN	Beer	Exp.	–	50+	250	PSI	Const. 11/90
Crestwood Int'l	Mocksville, NC	Chicken processing	New	–	1	–	–	–
Custom Food Processors	Blue Earth, MN	RTE cereals & snacks	New	30	2.1	80	–	Comp. April
D								
D-D's Country Muffins	Chaska, MN	Frozen bakery prod.	New	33	1.3	–	–	–
Dairylea Co-op	De Witt, NY	Milk products	Exp.	–	1.1	–	–	–
Dairylea Co-op	Oneida, NY	Milk products	Exp.	20	–	100	–	–
Dairymen's Creamery Ascn.	Boise, ID	Ice cream	Exp.	20	–	–	Mead & Hunt	Comp. Oct.
Drake Bakeries	Wayne, NJ	Snacks	Renov.	–	4	–	El Assoc.	Plng.

NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employ-ees	Architects/ Engineers	Status & Date
Damani Foods	Bloomsburg, PA	Pasta	Exp.	100	40	400	Lockwood Greene	Plning.
Delta Beverage Group	Columbus, MS	Distribution center	New	–	2	–	–	–
Del Monte	Port Manatee, FL	Chilled warehouse	New	58	4	–	Edifice Corp.	Comp.
Del Monte	Savannah, GA	Dist. ctr.	Renov.	60	3	–	St. Onge, Ruff	Comp.
Dole Food Co.	Bakersfield, CA	Carrots	New	60	8	125	Foodpro Int'l.	Comp.
Durkee French Foods	Springfield, MO	Mustard	Exp.	–	–	60	–	–

F

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employ-ees	Architects/ Engineers	Status & Date
Fairfield Farms	Hanover, MD	Froz. Soups	New	80	11	–	Webber/Smith	Stup. June
Farm Fresh Dairy & Bakery	Chandler, OK	Whey processing	Exp.	35	–	21	–	–
Feather River Foods	Maryville, CA	Fruit	New	35	7	50	Foodpro Int'l.	Comp.
Flowers Baking Co.	Bradenton, FL	Bakery products	Exp.	100	5	100	–	–
Foremost Dairies	–	Dairy proc.	New	–	30	–	–	Stup.
Forest Packing Co.	Forest, MS	Poultry	New	–	3	–	–	–
Foster Farms	Fresno, CA	Chicken processing	Exp.	150	25	1000	–	–
Freeze Pt. Storage	Manteno, IL	Refrig. warehouse	Exp.	50	–	–	Stellar Group	–
Frito-Lay	Irving, TX	Snack foods	Exp.	–	1.5	–	–	–
Frito-Lay	Mount Kisco, NY	Potato & corn chips	Exp.	22	–	–	–	–
Frito-Lay	Jackson, MS	Snack foods	New	–	2.4	–	–	–

G

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employ-ees	Architects/ Engineers	Status & Date
General Foods	Jonesboro, AR	Cereal	New	230	–	–	A. Epstein & Sons, Int'l.	–
General Mills	Saint Charles, IL	Cereals	Exp.	–	3	–	–	–
Golden Poultry	Tuscumbia, AL	Broiler feed	–	–	3	–	–	–
Gordon Foodservice	Grand Rapids, MI	Foodservice dist.	New	225	34	–	Webber/Smith	Comp.

H

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employ-ees	Architects/ Engineers	Status & Date
Heiner's Bakery	Huntington, WV	Breads & buns	Exp.	–	5.5	–	–	–
Heinz Pet Foods	Bloomsburg, PA	Pet food	Renov.	100	40	12	Lockwood Greene	Const.
Heller Seasonings	Modesto, CA	Food seasonings	New	40	–	–	–	–
Hershey Foods	Derry Township, PA	Chocolate	New	130	100	60	Sverdrup Ballinger	Const.
Hill's Pet Products	Richmond, IN	Pet food	New	205	–	–	A. Epstein & Sons, Int'l.	–
Holly Farms of Texas	Center, TX	Chicken processing	Exp.	40	–	–	–	–
Hunter Jersey	High Point, NC	Milk & ice cream	Exp.	–	2.5	–	–	–

I

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employ-ees	Architects/ Engineers	Status & Date
IBP	Madison, NE	Meat processing	Exp.	–	20	150	–	–
IBP	Dakota City, NE	Meat processing	Exp.	–	10	100	–	–
International Cargo	Jacintoport, TX	Refrig. Dist.	New	240	–	–	Stellar Group	–
International Cargo	Barbours, TX	Refrig. Dist.	New	150	–	–	Stellar Group	–

J

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employ-ees	Architects/ Engineers	Status & Date
Jasper Popcorn Co.	Jasper, MO	Popcorn	Exp.	–	1	40	–	–
John Morrell & Co.	Sioux Falls, SD	Smoked meats	Exp.	–	–	300	–	–
John Morrell & Co.	Wilson, NC	Meat processing	New	–	–	350	–	–

NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employ-ees	Architects/ Engineers	Status & Date
K								
Kellogg Co.	Omaha, NE	RTE cereals	Exp.	–	20	–	–	–
Karlshamm's	Columbus, OH	Oils	New	–	–	100	PSI	Stup. March
Keebler Co.	Denver, CO	Warehouse	Exp.	46	8		A. Epstein	Stup. 11/90
Key Technology	Walla Walla, WA	Food	New	151	–	280	–	Stup. 10/90
Kraft General Foods	Humboldt, TN	Non-dairy cheese	Exp.	12	3.1	20	–	Comp. June
Kraft General Foods	Walton, NY	Cottage cheese	Exp.	10	–	–	Webber/Smith	Comp.
Kraft General Foods	New Sewlicky Twp., PA	Food products	New	188	8	105	–	–
L								
Leaf, Inc.	Robinson, IL	Candy	Exp.	200	20	–	El Assoc.	Const.
Lucks, Inc.	Seagrove, NC	Canned veg. & meats	Exp.	–	1.5	–	–	–
M								
Malt-O-Meal	Northfield, MN	Breakfast cereal	Exp.	30	2.5	–	–	Comp. Feb.
Mama Tish's Ital. Spec.	Chicago, IL	Italian ice	Renov.	50	–	–	A. Epstein & Sons, Int'l.	Const.
Marietta's Bakery	Marietta, OK	Cookies	Exp.	60	–	–	–	–
McCarty Farms	Canton, MS	Chicken	New	50	8	150	–	–
McCarty Farms	Vicksburg, MS	Poultry	New	100	10	200	Facility Engrs.	Stup. July
McCarty Processors	Forest, MS	Broilers	New	–	–	201	–	–
Meadow Gold	Huntsville, AL	Milk products	Exp.	–	1	–	–	–
Mid-American Dairyman	Pollock, SD	Cheese	Exp.	–	1	–	–	–
Mi Rancho Tortillas	Clovis, CA	Tortillas	New	28	3	–	–	Const. '91
Monfort, Inc.	Saint Joseph, MO	Pork processing	Exp.	–	3	225	–	–
Montaintop Baking	Pikeville, KY	Baked products	New	275	–	600	–	Stup. '91
Mountaire	Selbyville, DE	Poultry processing	Exp.	–	18	300	–	–
MPS	Omaha, NE	Meat processing	New	–	54.9	320	–	–
Mrs. Baird's Bakeries	Fort Worth, TX	Bread	New	130	–	125	–	Const. '91
Ms. Desserts	Baltimore, MD	Gourmet desserts	New	56	–	160	J. Knott, Inc.	Stup. 7/90
Musco Olive Products	Tracy, CA	Olives	Exp.	32	4	40	Foodpro Int'l.	Stup. April
N								
Nardone Brothers Baking Co.	Wilkes-Barre, PA	Pizza	New	50	2.7	74	–	Comp. Sept.
Nash Johnson	Rose Hill, NC	Turkey feed	New	–	–	–	Younglove	Const.
Nestle's	Ontario, CA	Chocolate products	New	157	2	–	–	–
Nichii Co.	Jefferson, IA	Soybean flake	New	–	–	–	Austin Co.	Const.
Normac Foods	Oklahoma City, OK	Processed products	Exp.	123	21	50	Webber/Smith	Stup. Nov.
O								
Ocean Spray	Bordentown, NJ	Cranberry prod.	Renov.	–	1	–	El Assoc.	Plng.
Odwalla Fruit Juice	Dinuba, CA	Fruit juice	New	100	3.5	50	–	–
Ore-Ida Foods	Pocatello, ID	Frozen entrees	Renov.	80	–	–	Webber/Smith CH_2M Hill	Comp. March
Oscar Mayer	Madison, WI	Meat prod.	Exp.	30	1.5	–	St. Onge, Ruff	Const.
Oscar Mayer	Sherman, TX	Dist. cooler	New	78	–	–	Haskell Co.	Comp. Aug.

NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employees	Architects/ Engineers	Status & Date
P								
Pennfield Corp.	Farmville, VA	Poultry processing	New	170	40	500	–	–
Pepperidge Farm	Adamstown, PA	Bakery prod.	New	600	180	800	Day & Zimmermann	Stup. '91
Pepsi-Cola	Atlanta, GA	Soft drinks	Renov.	–	10	–	Lockwood Greene	Plning.
Pepsi-Cola	Piscataway, NJ	Soft drinks	New	270	–	–	–	–
Perdue Farms	Eagle Springs, NC	Hatchery & poultry	Exp.	35	3	–	–	–
Petit Jean	Buffalo, MO	Poultry processing	Exp.	–	–	75	–	–
Petit Jean Poultry	Stilwell, OK	Chicken processing	Exp.	–	–	100	–	–
Petit Jean Poultry	Arkadelphia, AR	Chicken processing	New	–	–	380	–	Comp. Feb.
Picowave Processing	Nogales, AZ	Food processing	New	50	35	120	–	–
Pierre Frozen Foods	Cincinnati, OH	Meat & poultry processing	Exp.	25	12	50	–	Comp. Sept.
Pillsbury Co.	New Albany, IN	Dough products	Exp.	-	10	65	–	–
Pinahs Company	Pewaukee, WI	Snack foods	New	[illegible]	–	–	–	–
Price Chopper	Schenectady, NY	Dist. ctr.	Exp.	28	2	–	St. Onge, Ruff & Assoc.	Const.
Prime Quality Catfish Feeds	Moorhead, MS	Catfish feed	New	–	4	–	–	–
PVO Foods	Granite City, IL	Margarine & oil	New	60	3.5	110	–	–
Q								
Quibell Corp.	Roanoke, VA	Bottled water	Exp.	–	–	65	–	–
R								
Raley's	Sacramento, CA	Liquor, perish.	New	280	–	–	Food Plant Engineering	Stup. Dec.
Red Hook Ale Brewery	Seattle, WA	Beer	New	–	18	–	–	–
Richmond Cold Storage	Smithfield, VA	Refrig. warehouse	New	40	–	–	Stellar Group	–
Russell Stover Candies	Brownstown, IN	Candy	New	92	4.6	40	–	Comp. April
Ruiz Food Products	Dinuba, CA	Froz. Mex. foods	New	200	15	900	Paylor Group Response Design	Stup. March
S								
S.K. Foods	Lemoore, CA	Tomatoes	New	90	12	110	Foodpro Int'l.	Comp.
J.R. Simplot	Aberdeen, ID	French fries	Exp.	65	–	–	Webber/Smith	Comp.
Sanderson Farms	McComb, MS	Chicken proc.	New	100	12	325	–	Stup. Sept.
Sandridge Gourmet	Medina, OH	Salads	Exp.	29	–	–	Webber/Smith	Stup. April
Sara Lee Corp.	Tupelo, MS	Food processing	New	280	2	100	–	–
Sau-Sea Foods	Yonkers, NY	Frozen seafood	Exp.	–	1.5	–	–	–
Savanah Foods	Fremont, OH	Sugar	Exp.	–	–	–	PSI	Comp. 9/90
Schriver, Inc.	Buffalo, NY	Dairy prod.	Renov.	23	–	–	Webber/Smith	Stup. May
Smith's Food & Drug	Tolleson, AZ	Dist. ctr.	New	1.1	–	–	A. Epstein & Sons, Int'l.	Const.
Smith's Food & Drug	Layton, UT	Ice cream/yogurt	New	155	–	–	Webber/Smith	Comp. 9/90
Southeastern Specialty Foods	Ellisville, MS	Fruit juices	Exp.	75	3	–	–	March 1991
Southern Hens	Moselle, MS	Processed poultry	New	85	10	175	Davy McKee	Comp. Aug.
Southern Pride Catfish Co.	Greensboro, AL	Catfish processing	Exp.	–	–	85	–	–
Stadlers Country Hams	Elon College, NC	Country hams	Exp.	70	–	–	–	–
Stefano's Food Products	Huntington, NY	Ital. spec. foods	Exp.	–	2	–	–	–

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employees	Architects/ Engineers	Status & Date
Steuben	Buffalo, NY	Cultured prod.	Renov.	–	–	–	Hixson	Plning.
Stokely USA	De Forest, WI	Canned vegetables	Exp.	250	2.8	–	–	–
Strongheart Products	Frontenac, KS	Dog food	New	–	–	50	–	–
Sunland	Portales, NM	Peanut butter	Exp.	–	–	55	–	–
Sunshine Dairy	Portland, OR	Yogurt	Renov.	22	–	6	JAI Engineers	–
Sysco Corp.	Dallas, TX	Dist. ctr.	Renov.	90	–	–	Webber/Smith	Comp. 12/90

T

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employees	Architects/ Engineers	Status & Date
Trauth	Newport, KY	Dairy	Exp.	30	–	–	Hixson	Plning.
Travis Meats	Powell, TN	Meat processor	Exp.	–	1.5	–	–	–
Tropicana Products	Jersey City, NJ	Dist. ctr.	New	210	68	–	Sverdrup	–
Tropicana Products	Bradenton, FL	HQ/processing	Exp.	–	–	–	Stellar Group	–
Tropicana Products	Ontario, CA	Juice processing	Exp.	100	–	–	Stellar Group	–
Turkey Hill Dairy	Conestoga, PA	Ice cream	Renov.	–	–		JAI Engineers	Const.
Tyson Foods	Shelbyville, TN	Poultry processing	Exp.	–	4.5	–	–	–

U

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employees	Architects/ Engineers	Status & Date
U.S. Cold Storage	Tulare, CA	Refrig. Warehouse	New	100	–	–	Stellar	–
U.S. Cold Storage	Laredo, TX	Refrig. Warehouse	New	150	–	–	Stellar	–
U.S. Cold Storage	Nashville, TN	Refrig. Warehouse	New	40	–	–	Stellar	–
United Refrigerated	Atlanta, GA	Refrig. Warehouse	New	150	–	–	Stellar	–

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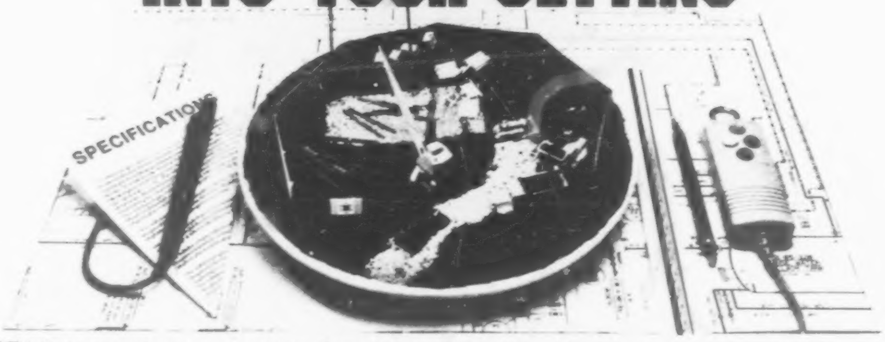

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NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employees	Architects/ Engineers	Status & Date
V								
Van den Bergh Foods	Thorofare, NJ	Baked goods	Exp.	25	–	–	Webber/Smith	Plning.
Ventre Packing Co.	De Witt, NY	Pasta & sauces	Exp.	80	1	–	–	–
W								
Wagner's Milk Prod.	Weyauwega, WI	Cheese, whey	–	2	2.3	–	Westia Const.	Stup. May
Ward's Cheese	Gooding, ID	Cheese	Exp.	43	–	–	Mead & Hunt	Const.
Warner-Lambert	Morris Plains, NJ	Candy	Exp.	45	5	–	El Assoc.	Const.
Washington Frontier Juice	Prosser, WA	Grape proc.	New	40	12	55	–	Stup. '91
Wegman's Food Mkt.	Rochester, NY	Food dist.	New	98	–	50	St. Onge, Ruff & Assoc.	Comp. Sept.
Westpac Pacific Foods	Lathrop, CA	Dis. ctr.	New	650	–	–	Food Plant Engineering	Stup. June
West Texas Ethanol	Clovis, NM	Flour	Exp.	–	–	54	–	–
Winn Dixie	Hammond, LA	Dist. ctr.	New	580	–	–	Stellar Group	–
Wisconsin Dairies Coop.	Milan, WI	Cheese	Exp.	34	–	–	Mead & Hunt	Comp. Oct.
Wisconsin Dairies Coop.	Waumandee, WI	Cheese	Exp.	10.6	–	–	Mead & Hunt	Comp. Oct.
Wortz Co.	Poteau, OK	Cookies & crackers	Exp.	64	–	100	–	
Z								
Zacky Farms	Traver, CA	Feed	New	–	–	–	Younglove	Stup. March

30 Texas Dairy Processors decided to own at least one!

Why? The next time they break a seal, they'll have printed data to show the health inspector. Thorough on-site testing with no waiting.

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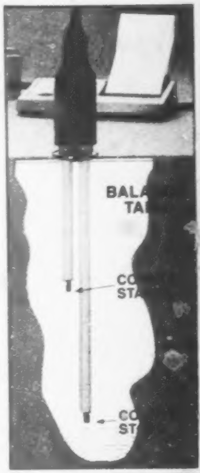

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Circle 75 or see FEM, p. 429

FOOD ENGINEERING

FOOD EXPO PRE-SHOW REPORT

CHILLED FOODS

DEVELOPMENT

MANUFACTURE

DISTRIBUTION

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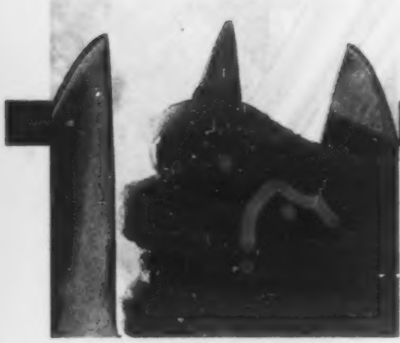
CONGRESSIONAL INF SVC
4520 EAST-WEST
BETHESDA MD 20814-3319

FOOD ENGINEERING



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Fresh foods are becoming "signature items" for an increasing number of supermarkets, but the problems associated with national distribution still need to be addressed.

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LOW IN SODIUM
Raisin
Nu
B
RAISIN BREAK
SAVE
8
RAISIN
Bakes
Country
Cupboard
Mellow-Munchie
MU
M

SPECIAL EMPHASIS

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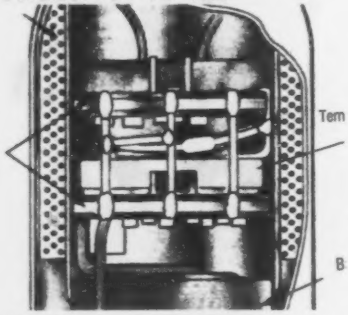

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JESSE H. NEAL
AWARD-WINNING
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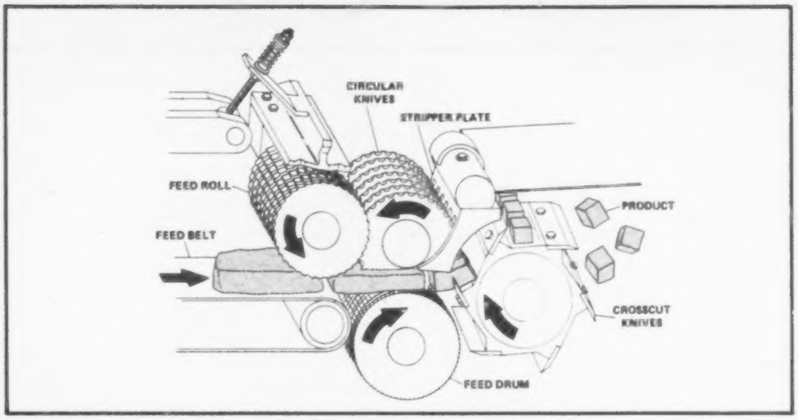
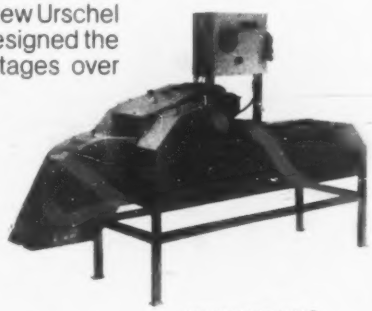
Now You Can Cut Fresh Or Frozen Tempered Meat



New Urschel® Dicer/Strip Cutter.

Now you can uniformly cut square or rectangular pieces of fresh, frozen tempered, or cooked meat at high production capacities with the New Urschel Model M Dicer. Urschel engineering designed the Model M with several distinct advantages over other conventional dicers including:



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- **Improved Slicing Action** – New, circular knives have scalloped design for improved slicing.
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The Model M features continuous operation for uninterrupted production & high capacities, stainless steel construction and simplified design for easy disassembly, clean-up and maintenance, and a rugged heavy duty design.

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THE SIZE REDUCTION SPECIALISTS

Circle 6 or see FEM, p. 420

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ABP

Circle 7 or see FEM, p. 66→

INDUSTRY REPORT

Food industry should shoulder some blame...

Mixed signals sent by the food industry, along with the media, government, and public interest groups, are partly responsible for the public's fear of pesticides and preservatives said Jack Cox, (pictured at right), president of the Foundation for American Communications (FAC). It is a Los Angeles-based educational foundation (sponsored by more than 125 media and other business corporations) that trains food companies in public relations, and journalists in writing proficiently about economics, environmental science, law and ethics. As an example of food companies sending mixed signals, Cox mentioned the dog food commercial that advertises that it does not contain pesticides or preservatives.

Speaking before Public Voice's 14th Annual National Food Policy Conference, Cox said news organizations mistakenly assigned political reporters to cover California's Big Green initiative, which was essentially an environmental story.

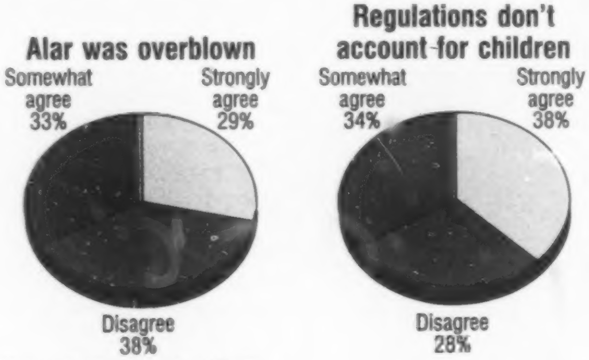
He also addressed public mistrust by saying, "It is ironic that while the nations of Eastern Europe and even the Soviet Union are turning radically toward democracy, ***too many Americans are losing faith in our system."*** *Cox also offered pointers for businesses to reclaim public trust: address the public's feelings; involve the public in decision making; answer phone calls from the press; admit past mistakes and lack of knowledge; avoid jargon; let technical people sensitive to the public answer questions; and develop a constructive relationship with journalists. For further information, contact FAC at (213) 851-7372.*

...while organic controversy rages

Public Voice for Food and Health Policy, which sponsored the conference in cooperation with the National Food Processors Association (NFPA), said that cosmetic quality standards for fresh produce are too high and encourage overuse of pesticides. Almost 53 percent of the retailers polled by Public Voice said consumers would be more likely to buy blemished produce if they were told it was grown using less pesticide.

After retail and wholesale organics sales posted four years of growth, last year the segment experienced a downturn, according to Public Voice. The special interest group faults separate marketing of organic produce and said higher prices for organic produce result from supermarkets failing to locate local growers or shippers who offer the highest degree of volume, variety and quality, according to Public Voice.

While Public Voice says there is interest in pesticide-free food, a study completed by the Center for Produce Quality (a foundation created by the Produce Marketing Association and the United Fresh Fruit and Vegetable Association) said 85 percent of the public agrees that washing fresh produce is an effective way to ensure it is safe to eat. Whatever their level of concern about safety, almost a third report their families are ***eating more fresh fruits and vegetables*** *over the past year, with only seven percent reporting they are eating less.*



Source: Center for Produce Quality.

While more than half of the consumers surveyed agree the alar threat was overblown, a greater number think more studies should examine how pesticides on food may effect children.

REDUCED FAT AND CHOLESTEROL CONFERENCE

Turn on the lites!

Low calorie	37.1 %
Low fat	41.4
Saturated fat	35.3
Reduced cholesterol	38.4

▲ More than one-third of *FE*'s Executive Advisory Panel said their companies are developing healthier foods.

Just a few years ago, marketing executives in the U.S. said, "Healthy doesn't sell." Nothing could be further from the truth today. New-generation healthier foods are derived from new-generation technologies in lowering fat and cholesterol. Such was the subject of the second annual conference on"Fat and Reduced Cholesterol Foods," sponsored by *Food Engineering* and International Business Communications. Held March 14-16 in Atlanta, the conference drew nearly 400 attendees. This month's *Engineered Foods* will provide a look at the topics presented. First, an overview of three challenges.

Mimetics + substitutes = replacers

As consumers clamor for healthy foods, technologists will need to know the strengths and limitations of various fat replacers before incorporating them into new food products. Fat replacers fall into one of two distinct categories, mimetics and substitutes, each with its own particularities.

Fat mimetics are compounds that help replace the mouthfeel of fats but cannot substitute for fat on a pound-for-pound basis. They generally contain a great deal of water so they cannot be used for frying. Mimetics can be further broken down by source: for example, *Simplesse®* (NutraSweet Co.) is a protein-based mimetic; *Oatrim™* (Rhone-Poulenc) and *Avicel®* (FMC) are cellulose-based; *N-Oil* (National Starch) and *Sta-Slim* (A.E. Staley) are starch-based mimetics.

Fat substitutes are molecules whose physical and thermal properties resemble fat. Theoretically, they can replace fat in all applications, even frying. But many promising new substitutes are still awaiting FDA approval. Proctor and Gamble's *Olestra®* (sucrose polyester) was patented in 1971, but is still not commercially available. Other companies are also playing the waiting game: Frito-Lay (malonate ester), CPC International (trialkoxytricarballyate) and Curtice-Burns (alkyl glycoside polyester) are among them.

Sensory Implications

Sylvia Jones of Leatherhead Food Research Associates (U.K.) suggests taking a "holistic approach" to the development of a reduced fat food. Lowering the fat content of a food requires adding new ingredients to retain acceptable textural characteristics.

"Reduced-fat products, especially spreads, are characterized by distinct off-flavor notes that are less clearly perceived in full-fat products," commented Jones. "Proper rounding of flavor notes and creating a mouthcoating effect is necessary." Equally important is the partitioning of flavor components between fat and oil phases in the food. This helps to modulate flavor release during chewing, forming the actual perception of flavor.

Labeling

Sooner or later, anyone involved with low-fat formulations will

Expanding efforts by food processors to develop foods lower in fat and cholesterol attempt to reverse an alarming trend: one person dies every minute from heart disease in the US.

have to confront the issue of product labeling. Virginia Wilkening, a nutritionist with the FDA, commented that the Nutritional Labeling and Education Act of 1990 is undergoing revisions concerning nutritional label content, nutritional label format, ingredient labeling, description/food standards and health claims.

Marketers will need to toe the line under the new rulings—"no cholesterol" claims will soon be illegal in products that never contained cholesterol, such as peanut butter. However, the product *can* be branded in such a way as to educate the consumer. In other words, although you can't call your product "no cholesterol peanut butter," you may call it "peanut butter: a no-cholesterol food."

Next year's conference is slated for March 25 and 26 in Philadelphia. Contact International Business Communications, 8D Pleasant Street, South Natick, MA 01760, or phone (508) 650-4700 for more information. ▲

Is it live or is it SPE?

Like the Memorex ads, scientists are asserting that sucrose polyesters (SPE) synthesized from soybean oil are virtually identical to conventional salad oils with respect to physical properties. Thus, new substitutes like *Olestra* are expected to perform well in reduced-fat products.

Composition: Both soybean SPE and salad oils are liquid at room temperature. Carbohydrate polyesters must contain at least 50 percent unsaturated fatty acids to be liquid at ambient temperatures. Soybean SPE is 53 percent unsaturated. GLC determinations indicate that salad oils are also at least 50 percent unsaturated.

Color: Based on refractive indices, SPE is nearly indistinguishable from corn or safflower oil. To the naked eye, both soybean SPE and safflower oil are a pale yellow color.

MARKETPLACE

Sales opportunities burgeon for fat replacers

Fat reduction technology has infiltrated many product categories. Today, 10 percent of retail sales in applicable categories are devoted to reduced-fat products. Clearly, growth opportunities abound for the fat replacers used in these foods.

"Potential dollar sales volume for any particular fat substitute can be estimated by evaluating recent per capita fat and oil consumption in the U.S.," said Dr. Marvin J. Rudolph, director of technology and product development at A.D. Little, Inc. (Cambridge, MA). "The per capita fat consumption multiplied by two factors—an estimate of the reduced-fat market potential and the most probable level of fat replacer—yields an estimate for per capita consumption."

	Margarine	Salad/ Cooking Oils
Consumption, lb. per capita	8.7	23.5
Estimate of market potential	33%	25%
Probable replacement level	50%	33%
Lb. fat substitute per capita	1.44	1.94
Lb. fat substitute for population	360 million	485 million
Fat substitute sales at $1.50/lb.	$540 million	$730 million

▲ A.D. Little's research shows market potential for fat replacers based on per capita fat consumption by product category. (Source: A.D. Little.)

For example, assuming *Brand X* fat substitute sells for $1.50 a pound (roughly five times the price of soybean oil), the potential market value can be calculated. A potential market worth $540 million exists for margarine products alone. Proctor & Gamble's *Olestra*® is expected to be a big player in this category, pending its approval.

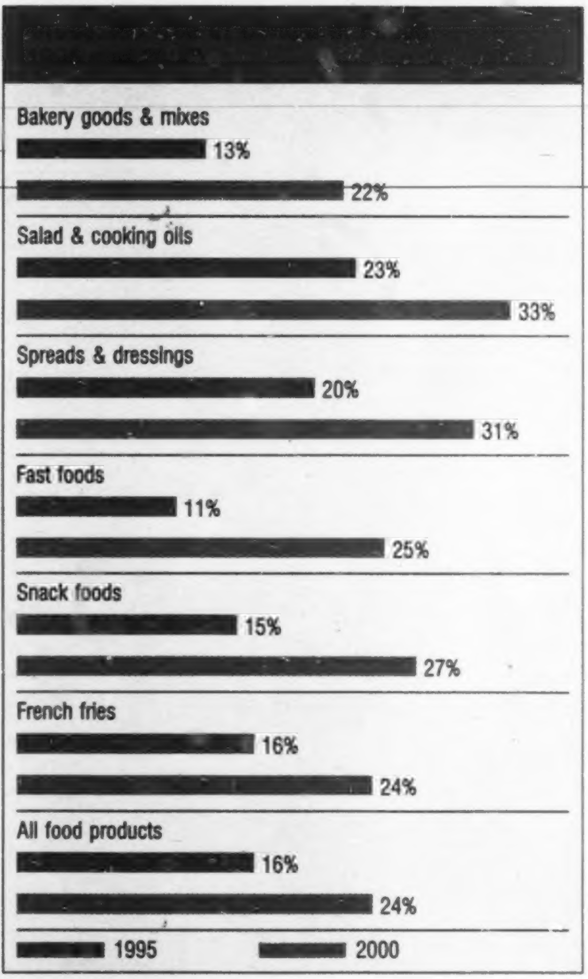
The low-fat salad dressing and mayonnaise market continues to grow each year. Figures indicate that fat replacer sales for this category could reach $730 million—leaving the door wide open for NutraSweet's *Simplesse*® and Kraft's *Trailblazer*™

Apparently, there's something in it for everyone in the fat replacer field, but the ones who walk away with the biggest prizes are those who best imitate fat's sensory appeal.

The future of canola looks bright

Canola oil, one of the healthiest vegetable oils available today, rose from relative obscurity, thanks to the upsurge of low-saturated-fat formulations. James M. Stanton, a consultant with Experience, Inc. (Minneapolis, MN) proposed the future market for canola.

Stanton estimates that by the year 2000, more than 30 percent of salad oils and dressings will contain canola. Overall, he expects nearly 25 percent of all food products will use canola as their fat source.



▲ **These results were obtained from a Delphi study and are accurate to plus or minus 3 percent. (Source: Experience, Inc.)**

Flavor problems and future solutions

Much attention has been given to the creation of mouthfeel systems in reduced-fat foods. Much less has been given to correcting the flavor problems associated with lower fat content. "There are tricks you can use in masking the effects of removing fat," stated Dr. Simpey Kuramoto, vice-president and business director of Givaudan Corporation. "You can always add more vinegar to salad dressing or more cinnamon to a coffee cake." But providing true fatty notes to a product is a different story.

Currently, the market interest in fatty flavors is in advance of supply and manufacture. But Kuramoto said that flavor companies are on the "cusp of change." Following are some new approaches under development:

- Fatty flavors will soon be used to mimic butterfat in yogurts and frozen desserts, and improve tactile sensations in baked goods.
- Melted cheese flavors would find application in macaroni and cheese entrees and process cheese.
- Mayonnaise and salad dressings would benefit from eggy notes (when egg yolks are removed) and vinegar toners.
- A full line of fried flavors developed for hamburgers, chicken and potatoes can enhance the characteristic notes of these products.
- Fried corn and masa corn notes improve the flavor of reduced-calorie snacks that are baked, not fried.

Givaudan Corp., 100 Delawanna Ave., Box 5034, Clifton, NJ 07015 **Circle 207**

Customizing starch blends

Reduced fat formulations can be "custom-designed" with A.E. Staley's *STA-SLIM*, its line of modified potato and tapioca starches, used in conjunction with an instant granular starch or gum. "Since no one single ingredient can replace the character of fat in a product, we take a total ingredient approach," said Michael Augustine, group leader of food starch technical services at Staley.

A tapioca starch combination works best in baked goods, lending creaminess. Potato starches are more suited to meats and salad dressings, as their greater setback produces almost complete thickening.

A.E. Staley Mfg. Co., 2200 E. Eldorado St., Decatur, IL 62525
Circle 212

INGREDIENT
BUYERS
SURVEY

'HEALTHY' means business

Interest in healthy foods impacts both ingredient buying decisions and R&D.

LETICIA MOORE
TECHNICAL EDITOR

For three years running, in our Ingredient Buyers Survey, the number one influence on ingredient buyers and product developers has been the formulation of healthy foods. But it's not as though nothing new is happening in food research. Rather, progress occurs in increments, not breakthroughs. Evolution, not revolution, is the name of the game.

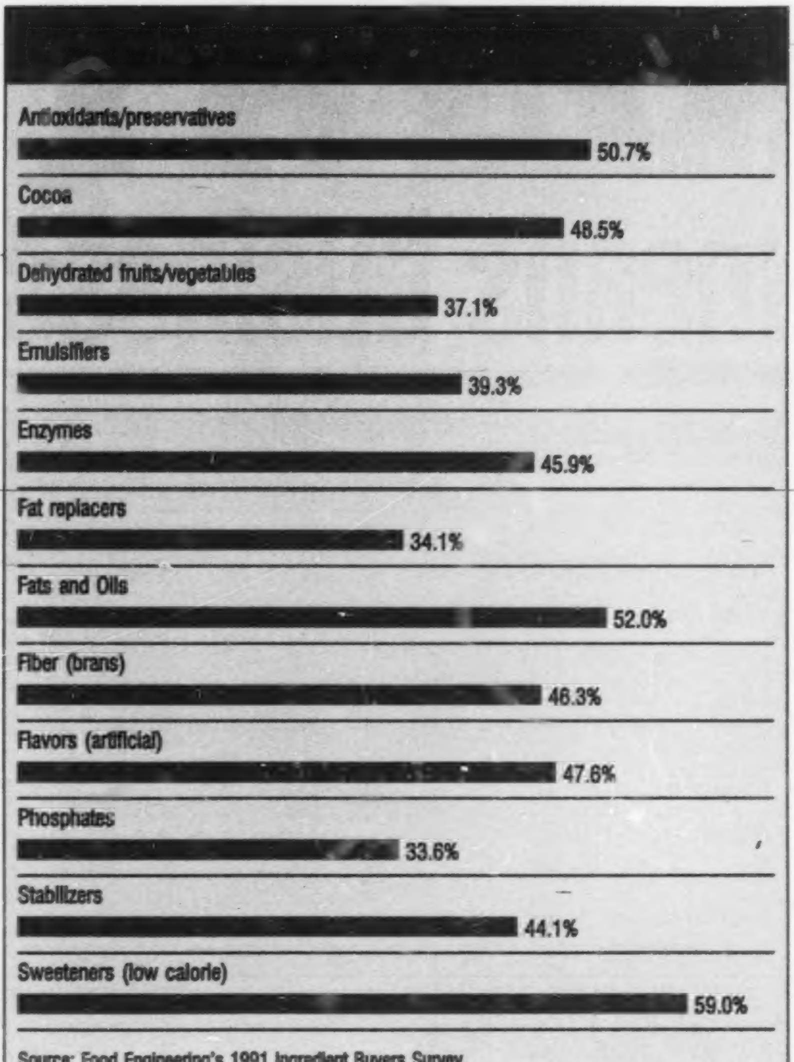
Reducing fat and calories will continue to be a major influence according to *Food Engineering's* 1991 Executive Advisory Panel, and the bywords are "more" and "better." The panel sees room for improvement in current healthy food formulations—as consumer demand increases, so will research efforts. A director of marketing at an Alabama dairy believes that "fat will be engineered so as to become a non-factor." Many panelists feel that non-fat foods will achieve the same sensory qualities as full-fat foods. "Eventually," said one Illinois product manager, "healthier foods will meet consumer demands."

Reduced levels of sodium, cholesterol and saturated fat are often partnered with reduced-calorie foods. It follows that these were also important influences on the food industry. Respectively, 67, 73 and 67 percent of the panel rated these issues as such. On the other hand, fiber seems to have lost its luster—55 percent of respondents said it would not be an influencing factor.

Use of natural ingredients is also of prime importance, especially in the beverage industry, where 61 percent

	No factor	Minor factor	Major factor
Natural ingredients			✓
Lessen/eliminate preservatives		✓	
Vitamin fortification	✓		
Low/reduced calorie			✓
Low/reduced fat			✓
Saturated fat		✓	
Reduced cholesterol		✓	
Adding fiber	✓		
Non-irradiated ingredients	✓		
Pesticide-free ingredients	✓		
HAACP at supplier		✓	
SPC at supplier		✓	
Microwave-specific foods	✓		
Proposition 65		✓	

Source: Food Engineering's 1991 Ingredient Buyers Survey.



Source: Food Engineering's 1991 Ingredient Buyers Survey.

felt this was a major factor in their buying decisions. The bottled water craze owes its popularity to the many true-to-nature fruit flavors available.

Hand in hand with using more natural ingredients is the trend toward lessening or eliminating preservatives. Forty-six percent of all respondents cited this as a factor. This may also be helped by packaging. Advances in packaging systems "will reduce, perhaps eliminate the dependence on preservatives," said one project engineer.

Other trends are surfacing, say our panelists. HACCP (hazard analysis/critical control points) and SPC (statistical process control) programs are receiving more consideration within food companies, and the companies involved in these programs expect the same of their ingredient suppliers. Proposition 65 is a piece of legislation that concerns many decision-makers: 34 percent saw it as an influence, and another 37 percent saw it as a major influence. Currently, the use of non-irradiated ingredients and pesticide-free ingredients are not an influence on buying decisions, but with the recent upsurge of organic food introductions, next year's tally may reflect a different attitude.

Better sweeteners needed

The impact of healthy foods resurfaced when we asked our panel which ingredient classifications fell short of desired performance. Respondents from each area of the food industry, including 72 percent of bakers, called for improved low-calorie sweeteners. There are limited options currently available for low-calorie heat-stable sweeteners. A technical director in Minnesota noted that the approval of new sugar replacers like sucralose would be a boon to the industry.

Ingredient buyers also want to see improvement in fats and oils technology. "Research should continue to probe into lipid chemistry, developing 'healthy fats,'" said the research head of a major cereal manufacturer. His response was echoed by panelists from the meat, bakery, dairy and frozen foods industries. "Fats and oils will be genetically engineered to avoid hydrogenation," said one food scientist from Illinois. Another scientist agreed: "Coconut oil will be engineered to act like soybean oil, and vice versa."

Advances in biotechnology will also benefit enzyme manufacturers, another area where the panel felt demand exceeded available technology. "But with enzymes—we as an industry are close," volunteered a research director from Wisconsin.

Finally, the panel saw a real need

for developing natural preservatives and antioxidants to extend shelf life. Fifty-one percent of all respondents and 79 percent of those in the canned and shelf-stable segment said they were not satisfied with their options. It seems that many processors view the use of natural preservatives as part of the healthy food trend. However, some feel that the answer lies in the past, not the future. A return to the old methods of preservation was one idea supplied by a Chicago packaging executive. Another Chicago executive, exasperated with what he called "gimmick" sales promotions, was ready for a "dose of the back-to-basic foods of yesteryear."

R&D today

Nearly 50 percent of *FE*'s respondents said that R&D was a high or top priority at their company. Increased visibility of research departments comes from a demand for more truly new products. And in many cases, "truly new" can be read as "new and healthy," as a wave of developers fuel the healthy food fervor.

Less dramatic, but also important, is the newly-forged relationship between research and manufacturing—59 percent of panelists thought opening the lines of communication was a positive change. The team concept (see sidebar) has evolved from this practice.

R&D personnel are also working more extensively with ingredient suppliers. Increasing cooperation between ingredient suppliers and food companies can benefit both sides of the equation: companies are satisfied

[illegible]

	Less development	Improve existing products	Staff reductions	Less capital investment
Meat	17.3%	34.7%	16.0%	30.7%
Bakery	15.4	29.2	16.9	29.2
Dairy	17.1	26.3	13.2	26.3
Flavors/ Ingredients	18.1	22.2	11.1	20.8
Fruit/ Vegetables	17.9	39.3	17.9	42.9
Fats, Oils	15.2	32.6	19.6	26.1
Frozen	18.9	18.9	18.9	27.0
Confections	16.3	26.5	20.4	26.5
Cereals	18.2	29.1	20.0	27.3
Beverages	12.2	30.6	16.3	26.5

Source: Food Engineering's 1991 Ingredient Buyers Survey.

Is the 'team concept' for real?

There's a lot of talk about the "team concept" of product development—members of engineering, marketing, production and research departments working together to create and promote new products. Sounds good on paper, but do food companies really subscribe to this theory?

Apparently, the answer is yes. According to our survey, 75 percent of respondents said the team concept is used at their company. Some of the more avid proponents explained:

- "We save time in development by checking production capabilities, labeling and sales needs at one time and working all ends together for a smooth flow to introduction of product."—*Manufacturing supervisor, PA.*
- "It's the only way to get buy-in from all parties."—*Engineer, WI.*
- "[It's] much more cost efficient in the long run, preventing problems once product goes to manufacturing."—*Director of research, CA.*

But not everyone is sold on the team concept. Many panelists who said they *didn't* use the team concept speculated that the power structure at their companies would discourage this type of arrangement—decisions were made at the top, they said. The mention of egos also cropped up regularly. And at some companies, rivalries exist between departments or individuals that hinder the notion of teamwork. Perhaps these companies could explore the dynamics of their organization to create a more functional and creative working climate. As one Texas executive summed up, "more heads are better than one."

[illegible]

POSITIVE	
Demand for more truly new products	62.5%
New healthy formulations	59.8%
Interface between R&D and Manufacturing	59.0%
Increasing cooperation between suppliers and food companies	50.7%
Need to keep high quality/low cost in balance	49.3%
Demand for more line extensions	35.4%
New formulations for changing processing requirements/techniques	35.4%
Wider selection of ingredients	30.6%
Customer's ingredient safety concerns	26.6%
NO EFFECT	
Food company mergers	46.3%
Ingredient company mergers	41.5%
QC responsibility on R&D	38.4%
Computerization/Automation	31.0%
NEGATIVE	
Increased work loads	32.3%
Tighter budgets	31.9%

Source: Food Engineering's Ingredient Buyers Survey 1991.

with good service and the ingredient supplier creates a solid reputation.

Traditional concerns such as line extensions, the high quality/low cost balance and processing refinements are still considered important to the product developer. The wider selection of ingredients makes the food scientist's job easier; and consumer concern over the ingredients used in their food ensures that the search for new, safe ingredients will continue.

In terms of what does and does not affect research operations, we saw three perspectives from the panel. First, mergers no longer affect research, said almost half of the panel. Perhaps this is because many companies are already operating "lean and mean," so that personnel from an acquired company are often absorbed into the new structure. The merging of ingredient companies also has no effect on R&D. However, this may result in better service and a wider selection of ingredients.

Even adding QC responsibilities and computerization to R&D seems to have no overall effect on its function. This philosophy is in keeping with many companies' synergistic views. Job descriptions are much less structured, so that if a new practice allows the company to operate more efficiently, it is adopted whether it fits into the classic bureaucratic structure or not.

Recessionary times are bound to have a negative effect on R&D. Technologists work harder on existing products while coping with staff reductions and less capital investment. Right? Not according to the panel—47 percent said the recession would have no effect on their operation. However, 32 percent of the remaining respondents were feeling the affects of increased work loads and tighter budgets. Fourteen percent of the panel expected to reduce their staff size, but less than two percent feared their facility would be closed.

We analyzed the results across all product categories, and discovered that panelists from every sector indicated they would be doing about 15-20 percent less development work. However, flavor and ingredient manufacturers, when compared to the others, are doing more work on new products. Those in the meat and canned foods industries will be spending their time and money improving existing products. Not surprisingly, panelists working in fats and oils or confections feared staff reductions the most. After all, these products were targeted as "no-no's" in a healthy diet. Finally, 43 percent of panelists from the canned foods sector cited less capital investment as an effect of the recession.

Recession or not, many factors influence ingredient buying decisions and the direction of research. But, regardless of the size of a company's pocketbook, one thing is clear. Creating a successful new product is impossible without creative formulations made from innovative ingredients.

The *Food Engineering* Ingredient Buyers Survey is available at a cost of $125. To purchase it, call Anne Hartnett at (215) 964-4444 or fax (215) 964-4273. ▲

CHILTON'S

JUNE 1991

FOOD ENGINEERING

SINCE 1928, THE SOURCE ON PROCESSING, PACKAGING, AND PRODUCT DEVELOPMENT

STATE OF THE FOOD INDUSTRY

FUTURE GROWTH: SET IN STONE?

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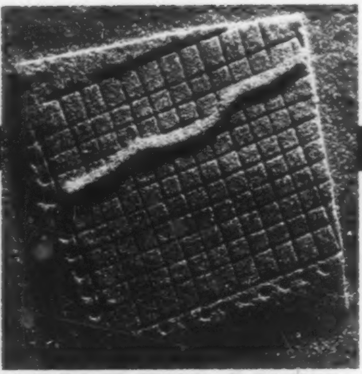

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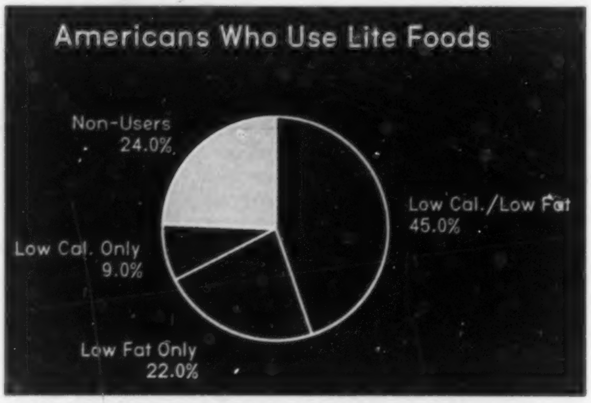
The lite food generation

It's official: low-calorie foods have infiltrated every sector of American society. "In 1991, you are an atypical consumer if you don't use a low-calorie product," said Bob Gelardi of the Calorie Control Council. Gelardi discussed the results of the Council's study at the 1991 Lite Forum sponsored by Pfizer, April 4 in New York City.

141 million consumers purchase low-fat or low-calorie products, *but only one-third say they are dieting. Low-fat foods are used to maintain good health and an attractive appearance, according to the study. Women are more likely than men to buy lite foods (72 percent vs 61 percent), purchasing lite dairy products most often. Meanwhile, the number of women using lite foods has been rising significantly since 1986. The elderly population of lite food users is also booming. The Council found a 62 percent increase in users from just five years ago.*



Only 24 percent of Americans do not regularly use reduced-calorie or reduced-fat foods. (Source: Calorie Control Council.)

Fuel from food wastes

Genetically-engineered bacteria are now capable of converting wastes generated by the agriculture, dairy and brewing industries into ethanol. The bacteria, developed at the University of Florida by Dr. Lonnie Ingram, are now produced by BioEnergy International of Gainesville, FL. Using ordinary wastes such as corn stover (stalks and cobs) as a substrate, the fermentation process is capable of generating ethanol at less than half the cost of current processes. Thus, ethanol will be an economically competitive alternative to gasoline.

The U.S. Department of Energy estimates that ethanol will eventually replace 50 percent of the 110 billion gallons of gasoline consumed annually in this country. And farmers should benefit from the new development—they will be paid for both their corn and their stover.

Typical agricultural wastes like corn stover can now be used to generate ethanol. (Source: University of Florida Information Services.)

If You Read It You Can Win

Keep your eyes peeled for Food Engineering*'s annual "Read-it-and-Win" contest this July. This could be your chance to win prizes, while achieving fame and fortune, just by answering some simple questions. (Well, it's a chance to win prizes, the fame and fortune are up to you.) Those readers answering every question correctly will be entered in a prize drawing. You'll find an entry form, along with a description and rules, in July's issue. Good luck, and remember...if you read it, you can win!*

STATE OF THE FOOD INDUSTRY

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SENIOR ASSOCIATE EDITOR

The food industry struggles to shape the future of a saturated market by turning to surgical marketing and the potential for overseas growth.

STATE OF THE FOOD INDUSTRY

Top 21 U.S. Food Processing Firms, 1991

Rank	Company	Worldwide food sales ($ billion)
1	Philip Morris	29.8
2	ConAgra	15.3
3	RJR Nabisco	9.9
4	IBP	9.5
5	Anheuser-Busch	9.3
6	Pepsico	9.0
7	Coca-Cola	8.5
8	Cargill	7.9
9	Archer Daniels Midlands	7.3
10	Sara Lee	7.1
11	Mars	7.0
12	Borden	6.5
13	Ralston-Purina	6.1
14	H.J. Heinz	5.9
15	Campbell Soup	5.8
16	Quaker Oats	5.6
17	CPC Int'l	5.1
18	Kellogg	4.7
19	General Mills	4.5
20	Coca-Cola Enterprises	3.9
21	Chiquita Brands	3.8

Source: U.S. Department of Agriculture Economic Studies, Report No. 1.

The food industry posted an eleventh consecutive year of growth with sales of $383.7 billion in 1990, up from $353.5 billion in 1989, according to the *U.S. Industrial Outlook*, published by the U.S. government. Through new product introductions, food companies continue to court a saturated market. However, finding new markets has become a top priority for most companies. One strategy has been to market within the U.S. differently, while another line of attack has been to investigate international markets that are just beginning to open, such as the Pacific Rim and Eastern Europe.

To get the most from mature markets at home, food companies have been advised to turn to "surgical marketing." Rather than settle for micro marketing's focus on regional markets, advertising on cable television, and special interest publications, surgical marketing is much more ambitious in zeroing in on potential customers through the use of zip code markets, direct response mail, and concentrating on individual stores within chains.

"Availability of new data will force businesses to change not only the way they market, but the way they manage their business. Retailers and competitive pressure will demand it. Very efficient marketing will be required to maximize return of resources. The name of the game is application of resources, just as placement of ordnances was the name of the game in the Persian Gulf war," said James Reider of Arthur D. Little, Inc. as he addressed the Second Annual Food Executives International Congress sponsored by the Food Executives International Foundation, Inc. mid-March in Washington, DC.

The successful CEO must direct precise allocation of corporate resources. Financial pressures have already caused many food companies, such as Campbell Soup and Borden, to downsize their operations. Obviously, tighter finances will dictate how a company manages its personnel, structures itself, sells, promotes, and advertises; and so it becomes imperative to know who is buying your products and why, Reider said. And additionally, who is not buying your product and why.

The food and beverage industry appears ready to meet the challenge of a more competitive market with increased efforts to exploit export opportunities. For the first time in 1991, the *Industrial Outlook* compiled information on international competitiveness, including trade forecasts and export/import data. Traditionally, the U.S. exports low value-added processed foods, such as fats, oils, grain mill products, meat, poultry and fish products, reports the *Outlook*, while importing luxury items, such as confections, bakery goods, alcoholic beverages and gourmet fruit and vegetables.

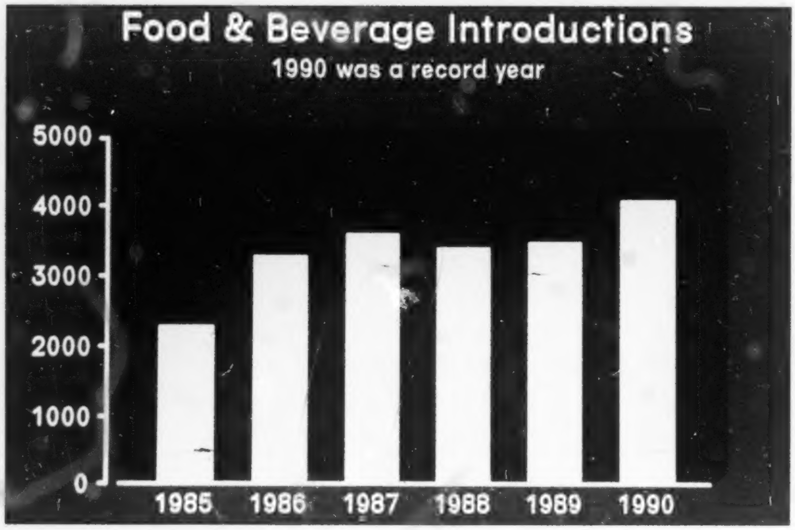
Although the level of imports in 1990 ($10.7 billion) still outshines exports ($8.8 billion), the DOC expects exports to become a source of growth in the economy. However, it must be noted that exports/imports are not a fair gauge of international economic activity since most large companies will build plants or partnerships overseas rather than export from the U.S. Significant interest in overseas operations have been shown by food processors:

- Probably in response to Cereal Partners, the General Mills partnership with Nestlé, Kellogg's has acquired a small Italian cereal company to bring its total European plant count to six. The Battle Creek, MI-based company's European cereal businesses have posted volume increases of seven to ten percent per year, according to *Value Line Investment Survey*, New York, NY. International profits are expected to approach U.S. operations as scale and efficiency increase and foreign pricing become more aggressive, *Value Line* adds.
- In late 1990, Borden signed a joint venture agreement with a Hungarian partner to produce sweet snacks and operate retail bakeries, with four outlets slated for Budapest in 1991. The company also ended a local partner-

STATE OF THE FOOD INDUSTRY

ship in Japan to establish its own production, distribution and marketing capabilities for cheese, margarine and ice cream. This year, Borden will produce Colombia's first individually-wrapped American process cheese slices.

•Heinz gets about 40 percent of its profits from abroad, according to *Value Line.* Favorable currency translations augmenting good international performance is helping boost the bottom line. The Pittsburgh-based company has posted earnings gains for 26 straight years.



Last year food and beverage introductions were at an all-time high at 4,132 (total SKUs were 10,640). (Source: Marketing Intelligence Service, Naples, NY.)

•Hormel acquired Parkin Food Products, Ltd., in England to produce its *Micro Cup* shelf-stable products.

•For the first time, profits from CPC International's European operations are expected to exceed its U.S. operations.

Some firms have become so globally-oriented that their national sovereignty becomes moot. Overseas operations comprise more than half the sales of companies such as Nestlé, Unilever, Coca-Cola, CPC International, Grand Metropolitan and Seagram.

In addition to foreign investment, there is a growing trend for food companies to forge product licensing agreements. Products such as *Spam, Lowenbrau, Miller Lite* and *Cadbury* are household names in both the U.S. and Europe.

Mergers and acquisitions

The frenetic merger and acquisition activity that became a hallmark of the food processing industry of the 1980s dropped by almost half from 1989 to only 66 in 1990, according to the Food Institute, Fairlawn, NJ. However, this appears to be a temporary lull since merger activity in other food industry segments continues to rage at levels similar to or higher than 1989. Mergers and acquisitions continue at a rapid pace for: dairy processors, diversified firms, meat packers, poultry processors, snack processors, soda bottlers, seafood processors, foodservice firms and food retailers, according to the Food Institute.

A notable acquisition that occurred in 1990 within the food processing category was the $1.3 billion purchase of Beatrice by ConAgra that created the nation's Number 2 food processor, right behind Kraft General Foods.

Meanwhile, food processors such as Borden and Campbell continue to downsize:

•Campbell Soup Co. sold Domsea Farms aquaculture operations to Dory Seafoods. It also sold all of its holdings in DNA Plant Technology, a biotechnology firm Campbell helped found in the mid-eighties.

•In 1990 Borden sold four dairy plants as part of its plan to deemphasize dairy products and zero in on its primary businesses which included acquiring two pasta and pasta sauce operations and one snacks operation. Borden is launching into phase 2 of its growth plan to become a low-cost producer in each of its businesses by closing about 65 out of 265 plants by 1992, cutting its workforce by 15 percent, consolidating production facilities and adding 11 hyperplants.

Meanwhile other companies continued to acquire regional brands:

•Hershey announced purchase of American Italian Pasta of Missouri, which is a little less than half the size of Ronzoni, which Hershey picked up last February.

STATE OF THE FOOD INDUSTRY

[illegible] food & beverage exports & imports 1990 ($ millions)

Industry	Export	Import
Red meat	4,113	3,052
Canned foods	1,910	1,518
Frozen foods	554	1,089
Liquor	290	1,328
Poultry slaughter	714	27
Bread, cake	106	245
Cheese	36	512

Source: U.S. Industrial Outlook.

•Dean Foods continues to snap up strong regional brands to milk growth in the mature dairy industry.

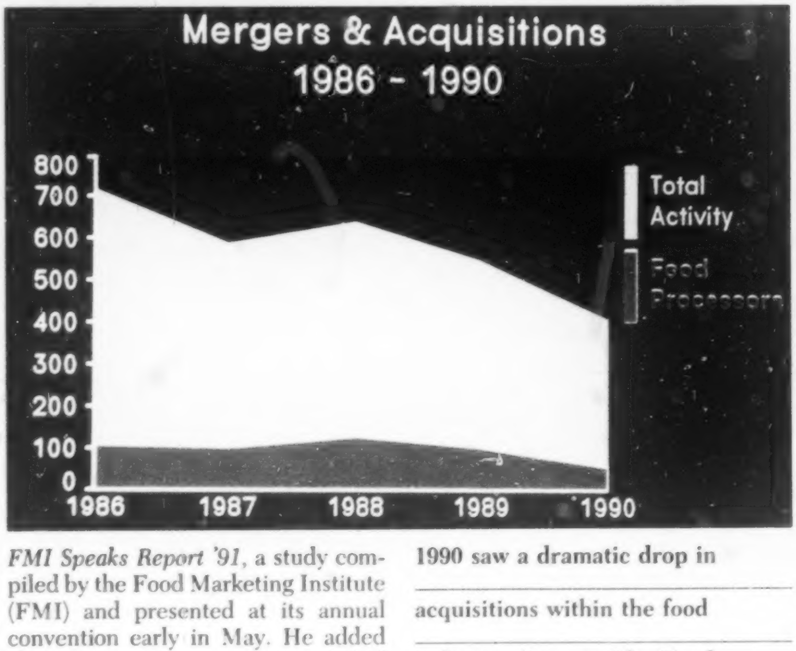
Slotting fees

Most companies prepared for the recession before it even got here by streamlining operations through plant closings, layoffs, selling off operations and cutbacks in R&D. Tighter allocation of resources combined with the computer age have spawned retail trends such as slotting fees. Last year alone, a record 4,132 new food and beverage product introductions elbowed their way onto already-crowded grocery store shelves. Food companies must pay slotting fees to get on the shelf and these fees have increased 40 percent in the past two years, according to Ron Weber, president, Weber Management Consultants, Inc., Huntington, NY. A manufacturer can pay anywhere between $30 to $50, or in rare cases, $150 per product per store in cash or gifts to assure placement on the grocery shelf, he added.

"Much of the impetus behind rising slotting fees is the need to make money to service heavy corporate debt" resulting from shrinking margins and the impact of mergers and acquisitions, said Weber. Large companies may be able to afford the slotting fees, while small regional manufacturers are being choked off grocery shelves by the expense.

Weber cited a recent study commissioned jointly by the Grocery Manufacturers of America and the Food Marketing Institute which found it costs a grocer about $14 to bring a new product to market while the average per store slotting fee grocers charge is about $36. Basically, grocers charge what the market will bear, he added.

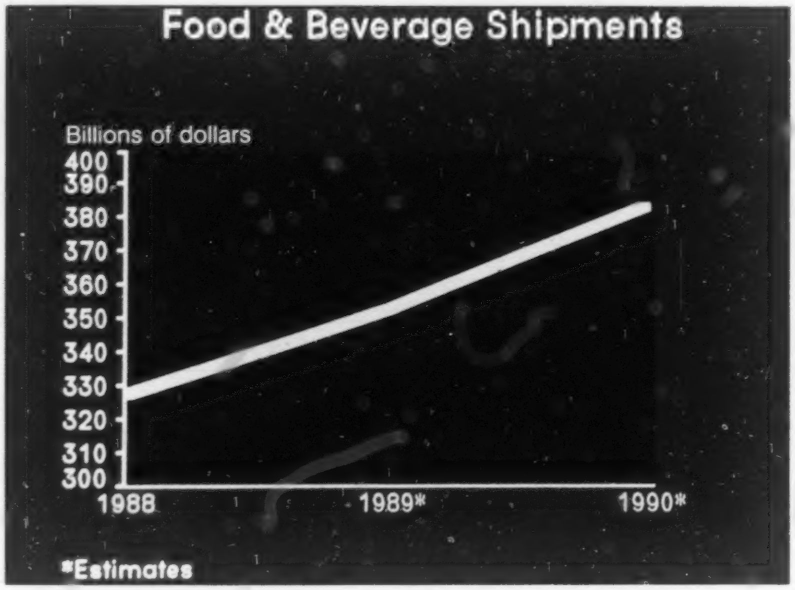
While food companies pay more to get on grocery shelves, sales at the cash register show no sign of suffering from the soft economy, because recession or no, we all must eat. "What people in general are doing more often during the recession is stocking up on specials (23 percent of those polled), buying more private labels brands (21 percent), and making more impulse purchases when they find bargains (18 percent)," said Mark Hollis, president of Publix Super Markets, Lakeland, FL, referring to *FMI Speaks Report '91*, a study compiled by the Food Marketing Institute (FMI) and presented at its annual convention early in May. He added that repositioning private label brands during the eighties to keep them viable was a wise move since many shoppers are trading down from



1990 saw a dramatic drop in acquisitions within the food industry. (Source: The Food Institute, Fairlawn, NJ.)

national brands.

Food processors can jump on the opportunity presented by shoppers who are going out to restaurants less frequently (23 percent), according to the *FMI Speaks Report.* Well-developed food products can capture abandoned restaurant dollars and hold onto them after the recession. The trend toward the grocery store is apparent by the increase in the average weekly family grocery bill from $74 to $79, according to the report, which says this is the first significant increase since 1985.



It was another record year for food and beverage shipments with sales of $383.7 billion in 1990. (Source: U.S. Industrial Outlook.)

However, food processing companies would be advised not to charge too much for new products designed to replace restaurant fare, since the amount of consumers who said they stopped buying products because they cost too much increased to 84 percent in 1991 from 1984's 72 percent. While consumers keep an eye on their wallets, they also are attentive to the environmental consequences of the foods they buy.

Green Marketing

Almost a third of the shoppers polled by the *FMI Speaks Report,* said they would refuse to buy a product because it is unrecyclable or features unnecessary packaging. A little more than half of those polled said they would be more likely to buy a food product made from recycled materials, according to FMI.

Keeping environmentalism in mind, food companies have formulated policies regarding recycling. Hormel is using recyclable materials on the outer jackets of *Top Shelf* entrees and other products. R.L. Knowlton, president and CEO of Hormel, pledged that containers that are not completely recyclable will undergo packaging changes to address the solid waste issue.

Quaker has committed itself to source reduction and uses recycled paperboard in its cereal boxes and recycled glass and aluminum for *Gatorade.*

Meeting the challenge

This year consumers are expressing greater interest in "green" products and companies will be tested to see if they can offer real solutions rather than advertising hype. The Federal Trade Commission is examining the use of environmental terms in advertising and food companies would be wise to be cautious about making green claims. Irresponsible nutritional claims resulted in legislation demanding expensive labeling changes resulting in expenses that food companies have yet to fully realize. While the FDA has said the cost to change the label per product is only $150, some in the industry claim that figure could actually be as high as $2,000 to account for product analysis. At any rate, food companies must take care to avoid the mistakes of the past by balancing the obligations of responsibility with the demands of a competitive market.

Finally, a world of challenge awaits both large and small companies who dare to think global. With a saturated market at home, companies are discovering there's a big world out there. Look to the following pages, to find out just what areas of the food industry are ready for the challenges that wait ahead. ▲

REFRIGERATED FOODS

Sara Lee
Carry-Out Classics
Sara Lee
Carry-Out Classics
Sara Lee
Carry-Out Classics
Sara Lee
Carry-Out Classics

Sara Lee developed but has not yet rolled out *Carry Out Classics*, a line of fresh refrigerated entrees. Initial inventory was sold frozen at the Sara Lee outlet store in Deerfield, IL.

Several national food processors tried over the past five years to enter the chilled-foods market with fresh, refrigerated entrees. Examples: Campbell Soup (*Fresh Chef*, *Fresh Kitchens*); Sara Lee subsidiary Emmber Brands (*Tonight's Choice*); General Foods (*Culinova*); Carnation (*Contadina* pastas); Kraft (*Chillery*, *Fresh Creations* and *DiGiorno* pastas); Nestle (*FreshNes*).

Only Carnation and the mega-merged Kraft General Foods (KGF) remain: Carnation with *Contadina* in national distribution; KGF with *DiGiorno* approaching national distribution and *Fresh Creations* in regional test markets. All three products are in modified-atmosphere (MAP) packaging. Because of their longer shelf lives (40 days for *Contadina*), the pastas can be distributed via supermarket chain warehouses. But most chilled foods have shorter shelf lives, requiring direct store-delivery (DSD) and tight refrigeration control.

"The market for prepackaged refrigerated meals can best be described as embryonic," reports FIND/SVP (New York City) in a new (1991) study. "In the overall convenience-foods market, [this] segment is the most underdeveloped and most fragmented—primarily because it offers the most difficult area for food processors to achieve broad-based success."

Major reason: no infrastructure for nationwide distribution of chilled foods exists, leaving the market mainly to smaller food processors equipped for regional DSD with their own refrigerated trucks. Examples: Grace Culinary Systems (Laurel, MD), which packs Marks & Spenser-brand refrigerated entrees with seven-day shelf life (including distribution time) for Marks & Spenser-owned King Supermarkets in New Jersey; Vie de France Culinary (McLean, VA), which distributes refrigerated *sous vide* products to mid-Atlantic markets (but frozen elsewhere throughout the country); Keyfresh Foods (West Chester, PA), which supplies a number of Wawa convenience stores with MAP-packaged fresh entrees and reportedly developed MAP entrees for a McDonald's market test; Chicago Fish House, readying a line of MAP-packaged fresh seafood products with 14-day refrigerated shelf life.

Meanwhile, Orval Kent—with a nationwide refrigerated distribution system in place for its fresh salads—introduced in May, 1990, its cook/chill-processed *Chilled Case Cuisine* line of fresh entrees with a 30-day shelf life for the volume-feeding and service-deli markets.

As reported last month in *FE*, chilled-foods production technologies are in place; HACCP programs have been developed and are being refined. Outlook: Chilled foods will continue to be a fragmented market until a national distribution infrastructure can be established, perhaps within two years.

Freshly Prepared
Beef
Pot Pie

Marks & Spenser-brand fresh refrigerated entrees are produced for Kings Supermarkets in New Jersey by Grace Culinary Systems (Laurel, MD).

STATE
OF THE
FOOD INDUSTRY

SHELF STABLE FOODS

Despite an outcry for "fresh, fresh, fresh," the American consumer's affinity for canned and shelf stable meals continues to march forward. The Department of Commerce reports in the *1991 U.S. Industrial Outlook* that the current-dollar value of the production of canned fruits, vegetables, and processed food specialties grew six percent to $30 billion in 1990, approximately a $2 billion increase over 1989's production, valued at $28.3 billion.

Trends and Forecasts: Canned Foods (in millions)

Industry data:				Percent change	
	1989[1]	1990[1]	1991[2]	1989-90	1990-91
Valuc of shipments	28,369	30,067	–	6.0	–
Value of shipments (1987$)	25,727	26,442	26,839	2.8	1.5
Product data:					
Value of shipments	27,245	28,850	–	5.9	–
Value of shipments (1987$)	24,712	25,413	25,794	2.8	1.5

[1] Estimate.
[2] Forecast.

Source: U.S. Department of Commerce: Bureau of the Census; International Trade Administration.

Light Balance
DINOSAURS
Campbell's MICROWAVE
Chicken with Rice
LUNCH BUCKET
MACARONI 'n BEEF
Pathmark
Heat n Eat
Chili

Estimated sales in 1990 for the microwaveable bucket market reached $391 million as the push for convenience continues.

The areas of this sector experiencing the most significant growth included assorted canned ethnic foods, salad dressings, baby food, tomato products and related sauces, dried soups, and aseptically packaged foods. Baby food sales volume has shown the most stellar growth out of this group, increasing to just under 12 percent in the past three years. The Department of Commerce reports that this rise is partly due to the introduction of new products low in salt and those with no sugar added.

However, as production values and shipments increase, Commerce reports that the "fresh trend" has caused changes in consumption of canned fruits and vegetables. Total per capita consumption of these products has declined in the past 10 years while consumption of fresh and/or frozen products has increased. For example, per capita consumption of canned fruits declined from 20.8 percent of total fruit consumption in the 1980-84 period to 18.4 percent in the 1985-88 period. Fresh fruit consumption rose from 68.8 percent to 70.3 percent during the same time period.

The microwaveable foods category, as part of the large shelf stable food sector, has been growing steadily during the last few years as convenience-hungry consumers gobble up a variety of products that require minimal preparation and minimal clean-up. Convenience and the increasing penetration of the microwave (now estimated to be over 80 percent in U.S. households) are the two main factors spurring growth in this area.

FIND/SVP estimates that sales of microwaveable shelf stable products reached $391 million in 1990 and forecasts that sales for the category will increase to over $1 billion in 1994, at a compound annual rate of 41 percent. But, the market does face a few challenges, Peter Allen, vice president, market research, reports. A large number of consumers have not used a microwaveable shelf stable product and surprisingly, many do not know they exist. Retailers, in order to gain more sales, need more experience on how to best promote and merchandise these products to a society demanding more convenience in food. And the price of these products is somewhat higher than those packaged in traditional forms (cans), affecting sales growth in this area. The technologies behind these products are still considered new and expensive, therefore processors and packagers must price the products accordingly in order to recapture some of these costs.

STATE OF THE FOOD INDUSTRY

MEAT & POULTRY

According to the *1991 U.S. Industrial Outlook*, the Department of Commerce reports that in 1990, current-dollar shipments by the meat and poultry products industries rose about 10.7 percent, to $97.2 billion. In 1990, the red meat industry accounted for about 78 percent of the value of all meat and poultry industry shipments, down from 81 percent in 1987. Adjusted for inflation, shipments increased 0.4 percent over 1989 totals.

In the past several years, diet and health concerns shifted animal-product consumption toward poultry. Poultry now accounts for 37 percent of all meat consumed, up from 26 percent in 1981, reports Commerce. Poultry products also cost less which positively affects sales; these products are often used more frequently than red meats in convenience foods and frozen items. During 1989-90, the average wholesale prices for beef and pork were $1.18 and $0.68 per pound, respectively, compared to $0.56 for chicken and $0.67 for turkey. Retail prices of these products: beef, $2.46 per pound, pork, $1.94, and poultry, $1.00 to $1.50.

A significant score for poultry occurred in 1990 — for the first time, per capita consumption of chicken and turkey equaled that of beef, an estimated 63.9 pounds based on trimmed weight of the products. Per capita consumption of poultry increased 15.6 percent between 1987 and 1990, says Commerce, while beef consumption declined 7.7 percent during the same time period.

But, says Marketing Intelligence Service Ltd. (Naples, NY), don't write beef out just yet. The industry's advertising and changes in the way beef is grown, trimmed and presented are aimed at making consumers rethink their attitudes. The service reports that beef is still the leader in the number of new packaged meats, meat meals and entrees. In 1987 and 1988, beef lost out to chicken for the most frequent variety of meat introductions. Beef inched ahead in 1989, and in 1990, widened its lead.

And the "lite trend" continued to invade the arena, as a number of new lite introductions were seen last year. Hillshire Farm introduced *Lite Smoked Sausage*, *Lite Polish Kielbasa*, and *Deli Select Thin Sliced Lunch Meats*. Oscar Mayer *Leanest Cuts* include *Smoked Beef*, *Baked Cooked Ham*, and *Smoked Cooked Ham*, and boast a 95 percent fat free composition. *Lite Beef Franks* were introduced by Hebrew National and contain 25 percent less fat than the company's standard beef franks.

"Consumer demand is critical to our industry," said Jim McVey, chairman of the American Meat Institute (AMI) and Oscar Mayer Foods Corporation. "What consumers want, they will pay for, what they don't want, they will ignore. The meat industry responds to these demand signals the same way the rest of the food industry does." But McVey believes the market for supermarket foods and restaurant meals will remain steady, representing a tremendous opportunity for the meat industry.

Some of the lite meat and poultry products introduced last year boast a record-high 95 percent fat free composition.

Polish Kielbasa
Lite
Oscar Mayer
Hebrew National
Lite
Beef Franks

[illegible]

Year	Beef	Pork	Poultry	Lamb & Veal	Total
1986	74.1	41.6	51.1	2.6	169.4
1987	69.2	41.8	55.3	2.3	168.6
1988	68.2	44.7	57.1	2.2	172.2
1989	65.[illegible]	44.3	60.5	2.1	171.8
1990[2]	63.9	42.6	63.9	2.0	172.4

[1] Boneless equivalent for poultry and red meat subtracts all bone and the fat that is normally trimmed before retail sale. In 1990, USDA revised its red meat and poultry consumption series to reflect changes in marketing practices and to facilitate comparisons of red meat and poultry on an equivalent basis.

[2] Estimate.

Source: Food Consumption, Prices and Expenditures, SB-804, U.S. Department of Agriculture, Economic Research Services.

ROZEN FOODS

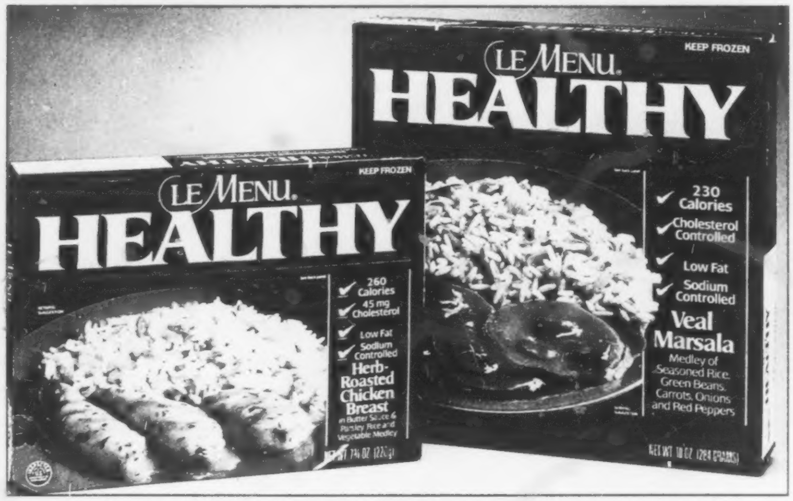
[illegible]

Year	Total sales	Annual % change
1985	2,378.6	13.5
1986	2,692.6	13.2
1987	3,056.5	13.5
1988	3,466.1	13.4
1989	3,937.5	13.6
1990	4,480.0	13.8

(Source: U.S. Dept. of Commerce; Business Trend Analysts.)

There's no such thing as a "sure thing," but the frozen foods market comes pretty close. As long as the nation's population of singles, working women and dual-income families continues to grow, so will frozen food sales. These groups are driving the market with their demand for innovative, convenient foods. According to the *U.S. Industrial Outlook 1991*, frozen food sales topped $14 billion in 1990 and some segments like dinners and entrees have been steadily increasing 13 percent every year since 1985.

Yet, some segments of the frozen food market are considered "mature"—certain specialties such as juices and pizzas grew a modest six percent. The real growth sectors are breakfast items, ethnic foods and healthy items. Breakfast foods gained 15.2 percent in 1990 to top $700 million in sales, competing successfully against their fast-food counterparts. Ethnic dinner sales topped $1 billion, according to figures published by Business Trend Analysts (Commack, NY). Although sales of Mexican entrees still tally over $500 million a year, Italian dishes are posting big gains. Italian entrees total 36 percent of ethnic sales, up from 29 percent just six years ago. Oriental entrees are also gaining quickly, as consumers clamor for more variety in product choices.



Healthy frozen entrees like Campbell's newly renamed line, account for more than a quarter of total frozen entree sales, and sales for this category should steadily increase for the next five years.

But the big story continues to focus on healthy frozen dinners and entrees. ConAgra virtually created this segment with its *Healthy Choice* line, now accounting for $300 million in annual sales and fully 8 percent of the *entire* $3.9 billion frozen dinner/entree market. Currently, 28 percent of frozen dinners are classified as "healthy,"; that number is expected to reach 40 percent by the year 2000.

Other industry giants are restaging their frozen dinner lines to compete more effectively with ConAgra. Campbell's changed the name of its *LeMenu LightStyle* line to *LeMenu Healthy*, while reducing its sodium content. And Kraft General Foods is test marketing *Kraft Alternatives*. The line is low in calories, cholesterol and fat, mimicking *Healthy Choice* right down to the green box.

The remaining 75 percent of the frozen entree market is dominated by Stouffer's "red box" products and a few other brands, but activity within the category is sluggish. Clorox is hoping to shake up the segment with its introduction of *Hidden Valley Ranch* entrees, and is promoting the line's "you'd swear it was fresh" taste.

Frozen dinner sales may be healthy, but seem cool in comparison to frozen dessert sales. Posting a 69 percent gain in 1990, frozen desserts captured 9 percent of the total frozen market (excluding sales of traditional ice cream). Sales of frozen yogurt, *Simple Pleasures, Kraft Free,* as well as fully-prepared heat and eat desserts from Pepperidge Farm and Weight Watchers, contributed to the astounding gain. In fact, the health-conscious segment accounted for two-thirds of the $215 million frozen dessert market in 1990 and forecasts show steady growth through the next five years.

BREAKFAST FOODS

Kellogg's recently boarded the rice bran bandwagon with the introduction of *Kenmei* cereal.

Kellogg's
KENMEI
RICE
BRAN
NEW
Kellogg's
KENMEI
RICE
BRAN
NEW

Contrary to last year's predictions by the U.S. Department of Commerce, in 1990 the cereal breakfast food industry dipped in both shipment and consumption. According to *U.S. Industrial Outlook*, the estimated value of product shipments decreased one percent, while per capita consumption dropped 2.5 percent in response to the 1989 retail price increase of 9.2 percent.

Oat product cereals fared the best in last year's climate, with a consumption increase of 3.1 percent. Rice cereals fell 2.1 percent in consumption, and hot cereals generally dropped two percent.

The proliferation of oat product cereals in 1989 slowed in 1990 due to recent evidence questioning oat bran's effectiveness in reducing cholesterol. In 1989, 65 percent of the 118 cereals on the market contained the word "oats." In 1990, however, that number dropped to approximately 59 percent.

Rice bran cereals, launched in 1990 under purported evidence that rice bran was even more helpful in reducing serum cholesterol than oat bran, faced difficulty in matching the clamor for oat products that arose in 1989. Kellogg Co., Quaker Oats Co., and Ralston Purina Co. all released rice bran cereals to a less-than-enthusiastic consumer response.

An interesting cereal trend in 1990 was the growth of private label brands. Manufactured primarily by Ralston-Purina, these have doubled their share in the last four years, and now battle Quaker Oats for the number four position. And by offering lower-priced versions of Kellogg's cereals, the private label brands are taking a bite out of Kellogg's number one ranking.

Marketing strategies in 1990 attempted to capture the growing market of children from ages five to 15 years. Presweetened cold cereals with product names licensed from movies or television shows reportedly appeal to this market; of the top 99 cereals, 12 portrayed licensed characters on the box. Particularly successful in this area was *Teenage Mutant Ninja Turtles* cereal.

Hot cereal manufacturers also attempted to capitalize on the growing youth market in the hopes of bolstering sagging hot cereal sales. General Mills, for example, offered *Undercover Bears* Oatmeal, which when heated reveals colorful, chewy, flavored bears. *Undercover Bears* is General Mills's first new product introduction since Oatmeal *Swirlers*, another youth-targeted innovation, debuted two years ago.

The outlook for 1991 indicates that cereal consumption will increase by one percent overall, with cold cereal consumption rising by one percent and hot cereal by .7 percent. This projection is based on the assumption that retail price increases will be not be as great as those seen in 1989 and 1990.

Product shipments of Cereal Breakfast Foods
(in millions of dollars)

	1987	1988	1989[1]	1990[2]	1991[2]
Ready to serve	4,711.1	5 246.0	5,940.7	6,385.0	6,758.0
Corn items	1,302.3	1,479.2	1,669.4	1,786.0	1,869.0
Wheat items	1,359.6	1,544.2	1,756.5	1,892.2	1,992.2
Oat products	706.9	802.9	915.9	991.5	1,078.1
Rice products	518.1	588.5	619.2	638.3	634.7
Mixed grains	824.2	831.2	979.7	1,077.0	1,194.0
Hot cereals	353.4	403.5	54.7	469.1	500.3
Oatmeal	120.5	136.8	150.7	154.5	161.1
Instant	163.7	185.9	220.7	234.4	256.6
Farina	60.2	68.3	71.4	67.9	9.9
Mixed grain	9.0	12.5	11.9	12.3	12.7
Unspecified items	15.9	17.9	20.0	21.5	22.8
Total	5,080.4	5,667.4	6,415.4	6,875.6	7,281.1

[1] Estimate.
[2] Forecast.

Source: U.S. Department of Commerce: Bureau of the Census and International Trade Commission.

STATE
OF THE
FOOD INDUSTRY

NACK FOODS

[illegible]

	1990	% change from 1989
Potato chips	4,124	+5.3
Tortilla chips	2,238	+6.4
Extruded snacks	1,090	+7.6
Corn chips	601.5	−5.4
RTE popcorn	428.1	+16.2
MW popcorn	898.3	+9.3
Pretzels	622.4	+11.6

Source: 1991 Snack Food Association State of the Industry Report.

EAGLE
TORTILLA CHIPS
NACHO CHEESE
EAGLE
TORTILLA CHIPS
RANCH

Eagle Snacks, Inc. jumped into the tortilla chip market with its Nacho Cheese and Ranch-flavored tortilla chips in 1990.

America loves to snack and nowhere is this more apparent than in snack food sales: 1990 snack sales totaled $12.67 billion, up 6.2 percent from 1989, according to the Snack Food Association (SFA), Alexandria, VA. Translated into pounds, that comes to 4.72 billion pounds, an increase of 3.5 percent over 1989, according to SFA.

The most dramatic gains were made by variety-pack snacks, which jumped in sales by close to 51 percent to $321.2 million, followed by ready-to-eat (RTE) popcorn which posted gains of 16.2 percent with sales of $428.1 million, and pretzels which rose 11.6 percent with sales of $622.4 million, reports SFA. The popularity of popcorn and pretzels can be attributed to consumers perceiving them as being healthier since they are not fried and have relatively low fat levels.

Big losers in the snack category were party mixes which dropped in sales by 23.4 percent from 1989 to $120.5 million and unpopped popcorn, which dropped 15 percent to $157.5 million, according to SFA. Interest in party mixes has gone stale while consumers bypass unpopped popcorn to scoop up more convenient RTE and microwavable popcorn.

Potato chip sales recouped from the potato shortage of 1989 to post a healthy sales increase. Borden introduced *Krunchers!*, a premium potato chip, which will grow from initial distribution in New England and the Mid-Atlantic states to national distribution in 1991. Other strong performers in 1990 were tortilla chips, extruded snacks, meat snacks, and pork rinds.

The $2.2 billion tortilla market has become more competitive since Eagle Snacks, Inc. of St. Louis threw its hat into the ring with *Nacho Cheese Tortillas* and *Ranch-flavored Tortillas*. Tortilla chips had long been the domain of Frito-Lay, Inc. of Plano, TX, but now the snack food giant dominates the light chip market which it launched last year with a line of chips featuring one-third less oil than regular chips.

Frito-Lay launched *Sunchips* multigrain chips early this year after market tests showed baby boomers wanted an alternative to potato, corn and tortilla chips, according to Dave Gustin, senior vice president of marketing. Sunchips are a blend of wheat, corn and other grains fried in either canola or sunflower oil.

The Plano-based firm is also test marketing *Suprimos*, a wheat-based, wavy snack (in Cool Onion and Cheddar & Jack flavors) aimed at active teens and young adults. It is the first wheat-based snack from Frito-Lay and is being test marketed in upstate New York.

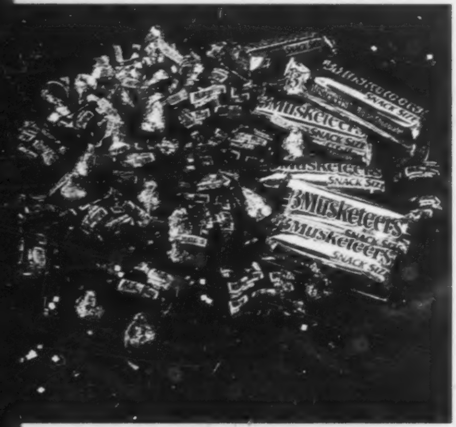
Doritos Cracker Crisps, a lighter, crisper version of a cracker made from corn (in Cool Ranch and Nacho Cheese varieties), is being test marketed in Indiana.

Snack nut sales dropped by 3.8 percent to $1.3 billion. The Blue Diamond Almond Research Center has been concocting some interesting variations of almond flavors which may ignite new interest in the segment. Chris Heintz, senior research scientist at Blue Diamond mentioned some of the latest flavors including: sour cream & onion whole almonds, salt & vinegar-flavored almonds, chili with lemon almond splits and nacho almond halves. The latest snack mix in the foodservice area is *Confetti*, Heintz added, a blend of sour cream & onion almond splits, peanuts, pretzels and sesame sticks.

February was the third annual Snack Food Month promotion, which many snack food companies said increased sales as much as 20 to 50 percent. The promotion is coordinated by SFA, which helps snack manufacturers cash in on one of America's great pastimes — snacking.

NFECTIONS

Despite the diet craze, Americans are still showing a penchant for sweets as per capita consumption of chocolate and nonchocolate rose in 1990.



Don't worry about having a sweet tooth because most Americans fall into the same category. Business Trends Analysts (Commack, NY) reports the U.S. market for candy, nuts, and chewing gum totaled $12 billion in 1990. By 2000, the firm estimates that sales are expected to increase to a little over $21 billion for an average annual growth rate of 6.0 percent.

In a segment-by-segment breakdown, BTA says that candy sales in 1990 exceeded $9 billion. Sales are projected to increase 6.2 percent on the average annually and reach $16 billion in the year 2000. Chewing gum racked up $838 million in sales in 1990 and by 2000, sales should increase to $1 billion at an average annual rate of 2.5 percent. Total sales of nuts and other confectionery items reached $2 billion in 1990. By 2000, after an average annual increase of 5.9 percent, this segment should reach $3.8 billion in sales.

Economic conditions seem to affect the confectionery market more than other areas of the food industry, so during economic slowdowns, consumers normally cut back on what is considered a nonessential item. But, the market is not taking the present downturn lying down, and has initiated a five-year promotional campaign to increase sales at the register.

Nor have product introductions during 1990 abated because of economic conditions. In fact, the types of products and marketing ploys are getting more imaginative. Marketing Intelligence Service (Naples, NY) describes the label of *Choc Daniel's Tennessee Jelly Bean Chocolates* as a "knock-off of a Jack Daniel's whiskey label." These chocolates are distilled and bottled by the Jack Company, Inc. and are pegged as old time gourmet quality. The label on the container tells the consumer the candy is "100 proof sweet tasting."

Sports figures are another means of promoting the confectionery market to consumers who can worship their favorite sports hero and satisfy their sweet cravings at the same time. Last year saw the introduction of the *Kelly Krunch*, a milk chocolate candy bar named after Jim Kelly, quarterback of the National Football League's Buffalo Bills. The 2.25-ounce bar sells for 99 cents and a percentage of sales goes to the Kelly for KIDS Foundation in Western New York state.

In 1991, says the Department of Commerce, the inflation-adjusted value of candy and other confectionery product shipments is projected to rise 1.8 percent. Total U.S. candy consumption is expected to exceed 4.7 billion pounds, rising almost two percent over 1990 levels. However, looking at long-term prospects for the industry, the market is expected to downsize through mergers and acquisitions while, at the same time, emphasizing new product development targeted at an aging population. Observers also predict that health consciousness on the part of the American consumer will affect new products entering this market.

[illegible]

Industry data:				**Percent change**	
	1989[1]	**1990[1]**	**1991[2]**	**1989-90**	**1990-91**
Value of shipments[3]	7,723	8,117	8,637	5.1	6.4
Value of shipments (1987$)	7,412	7,551	7,684	1.9	1.8
Product data:					
Value of shipments	7,825	8,240	8,784	5.3	6.6
Value of shipments (1987$)	7,510	7,665	7,815	2.1	2.0

[1] Estimate.
[2] Forecast.
[3] Value of all products and services sold by establishments in the candy and other confectionery products industry.

Source: U.S. Department of Commerce: Bureau of the Census; International Trade Administration.

STATE OF THE FOOD INDUSTRY

BAKERY PRODUCTS

Sesame Street's Cookie Monster is reveling in munchiemania as cookies continue to outpace the overall bakery segment in shipments and per-capita consumption. According to *U.S. Industrial Outlook 1991* (U.S. Dept. of Commerce), the value of cookie shipments rose to nearly $4.1 billion in 1990, up an astounding 21 percent from $3.36 billion in '88, and will reach approximately $4.5 billion this year.

Per Capita Consumption of Bakery Products (lbs. per person)

	1989[1]	1990[1]	1991[2]	1992[2]
Bread	49.2	49.9	50.5	51.3
Rolls	22.3	22.9	23.5	24.0
Sweet yeast goods	3.9	4.0	4.2	4.3
Soft cakes	7.5	7.8	8.0	8.3
Pies	1.7	1.7	1.7	1.7
Cake-type donuts	1.3	1.3	1.2	1.2
Cookies	13.2	13.7	13.9	14.4
Crackers	8.6	8.9	9.4	9.7
Pretzels	1.2	1.2	1.3	1.4

[1] Estimate.
[2] Forecast.

Source: U.S. Department of Commerce.

Vie de France introduced three whole-grain, high-fiber European hearth breads in frozen or par-baked form for restaurants and bakeries. (Source: Vie de France.)

Per-capita cookie consumption grew from 12.2 to 13.7 lbs. over the same two-year period and will reach 14.4 lbs. by '92.

The reason says the Commerce: "Companies are targeting many new premium-brand cookies, often containing honey and fruit juices as alternative sweeteners, at health-conscious consumers," while "replacing tropical oils and white flour with soybean oil and whole-wheat flour,"

According to *Industrial Outlook*, the 1990 value of bakery-product shipments totaled $24.3 billion, up 6.7 percent from '89 in current dollars and 1 percent when adjusted for inflation. Cookies and crackers led with a 9 percent growth rate; bread, cake and related items followed at 6.2 percent rate.

New products accounted for part of this growth: Marketing Intelligence Service (Naples, NY), reports 577 new bakery products (1,382 SKUs) werelaunched last year, compared to 453 (1,103 SKUs) in 1989 (*FE* Mar., '91). Commerce reported that 175 bakery products introduced in 1989 bore health-claim labels; Marketing Intelligence reported that that nearly doubled to 317 last year.

Frozen bakery products have been sliding since 1982, with per-capita consumption falling another 4.9 percent last year, says the Commerce Department. Reasons: consumer concerns about diet and preparation time, and growing competition from fresh products offered by in-store bakeries.

Per-capita consumption of all bread products rose 1.5 percent in '90, with white-pan bread accounting for 56 percent. The "lite bread" trend launched in '89 with white was extended last year into variety breads such as rye and wheat. Per-capita consumption of rolls and sweet goods each rose 2.6 percent, while bagel noshing soared 10.5 percent.

The 1989 surge in ingredient and packaging costs abated somewhat last year as labor costs rose 3.5 percent and overall producer prices rose 4.8 percent. Consumer prices, however, rose 6.4 percent.

Outlook: Constant-dollar value of shipments will rise 1.1 percent this year, says the Commerce Department, with cookies and crackers leading the way at 3.5 percent as frozen products (except for soft cakes) decline another 6.3 percent. Commerce predicted that rising fuel costs would slow growth in this energy-intensive industry, but stabilizing oil prices following The Gulf War may give the industry a boost.

STATE OF THE FOOD INDUSTRY

SEAFOOD

Pollock landings soared 34 percent, reflecting surging surimi markets and new foods such as "crabcakes."

(Source: The Berelson Co.)

According to preliminary data from the National Marine Fisheries Service (NMFS), U.S. domestic landings of fish and shellfish reached a record 9.71 billion lbs. valued at $3.57 billion in 1990. This is up from 8.46 billion lbs. valued at $3.24 billion in '89. Most of the gain came from Alaskan pollock, where nettings soared 34 percent from 2.36 billion lbs. in '89 to 3.16 billion lbs. last year, reflecting the surging surimi market.

Per-capita consumption figures for 1990 were not yet available at presstime; NMFS was revising consumption figures and cautions that its earlier per-capita estimates for 1989 and 1990 might be revised downward. According to earlier data, 1989 per-capita consumption reached a record 15.9 lbs. as consumers reduced red-meat consumption in favor of fish and poultry. Per-capita consumption of canned seafood, which had declined in 1987 and '88, jumped 0.4 lbs. in '89 due mainly to tuna, which accounted for 25 percent of overall seafood consumption.

Other consumption categories in '89: Groundfish (29 percent); other finfish (19 percent); shrimp (14 percent); mollusks and other shellfish (11 percent); crustaceans (3 percent). The industry's trade deficit fell as food exports rose to $1.18 billion and imports dropped to $2.52 billion.

According to USDA, 360 million lbs. of farm-raised catfish (live weight) were produced last year, up 5 percent from '89, and grower sales reached $323 million, up 20 percent. Trout growers reached $76.9 million in sales, up 7 percent from '89.

Other forms of U.S. aquaculture are fledgling industries faced with technological, environmental, regulatory and competitive-import problems. U.S. farm-raised salmon production in 1989 (latest year available) was between 8 and 9 million lbs. (as compared to 733.1 million lbs. valued at $612.3 million landed domestically, plus $300 million worth of salmon imports in 1990). About 2 million lbs. of shrimp were produced on farms last year, a mere fraction of the 346.5 million lbs. landed domestically (down 5 million from '89) and the 544 million lbs. imported. Alligator production zoomed from nearly zero in 1979 to 83,000 in '89, while cultured crayfish production reached 15.6 million lbs. of edible weight in '89, up 100 percent in 10 years.

National Fisheries Institute (NFI) set a seafood consumption goal of 20 lbs. per capita by the turn of the century, meaning consumption must rise from 3.9 billion lbs. in '89 to 5.4 billion lbs. by 2000. NFI's supply outlook: Shrimp—with stable wild harvests and aquaculture in place (mainly abroad)—offers the best promise, with finfish such as salmon also benefiting from aquaculture, although halibut and swordfish landings will decline. Supplies of groundfish (such as pollock, flounder and cod) will depend on improved processing technologies, fisheries management and use of underutilized species such as hake. Tuna demand will have to be more satisfied by skipjack and less by the albacore and yellowfin varieties.

[illegible]

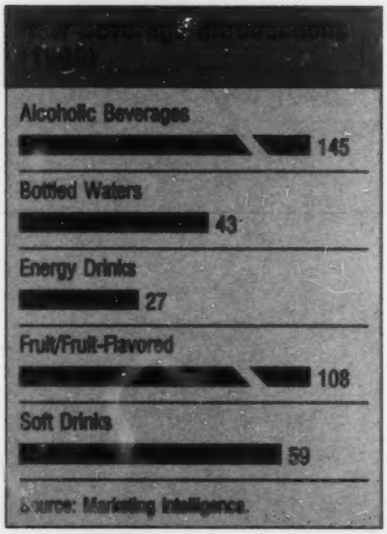
	1988	1989	1990[1]
Fresh/ Frozen	10.2	10.5	–
Canned	4.7	5.1	–
Cured	0.3	0.3	–
Total	15.2	15.9	16+

[1] Estimate.

Notes: 1989 figures reflect surimi production; 1988 figures do not include surimi. NMFS is currently revising per capita consumption figures and cautions that figures cited above may soon be revised downward.

Sources: U.S. Department of Commerce; National Marine Fisheries Service.

BEVERAGES



Source: Marketing Intelligence.

TEAZ
HERBAL TEA
FRESHLY BREWED IN MOUNTAIN SPRING WATER

"New Age" beverages such as *Malibu Teaz* posted category sales of $2.2 billion in 1990. (Source: Marketing Intelligence.)

The beverage industry today is an amalgam of many niche industries (some of which did not exist a few years ago) and perennial products like soda and distilled spirits. One thing characterizes the industry as a whole: new and unusual products are introduced every day, each hoping to capture the consumer's fancy and spawn the next big trend.

A perfect example is the category of "New Age" beverages, where just about anything goes—and sells. Products like bottled herbal teas, natural sodas and coffee-flavored seltzers cater to specific, generally upscale, markets. As a category, New Age beverages accounted for $2.2 billion in 1990, representing 5 percent of the non-alcoholic beverage market.

Another category that has shown tremendous growth in the last few years is bottled water. Now a $2 billion market, bottled waters became popular as Americans sought an alternative to tap water. Both still and carbonated waters replaced alcohol or soft drinks for many. And even though competition has driven prices down, bottled water sales are expected to grow only 10 percent this year.

Despite tremendous sales figures, not everything is rosy for bottled waters. The FDA has been under fire from the General Accounting Office (GAO) for allowing "potentially harmful contaminants [in bottled water] that are not allowed in public drinking water." The GAO is demanding regulation after discovering that several regional bottled water brands contained millions more bacteria per milliliter than the FDA's standards mandate.

Controversy is nothing new to the beverage industry. In the most recent chapter of the cola wars, Pepsi accused Coca-Cola of giving preferential treatment to McDonald's Corp. at the expense of Coke's other restaurant clients. So far, Pepsi holds 26.3 percent of fountain sales, inching toward Coke's share of 59.7 percent.

Both Coke and Pepsi moved retail prices up 2 to 3 percent, but consumers seem to be taking the increases in stride. Bottled soft drink sales rose 6.4 percent in 1990 to reach sales of slightly more than $26 billion. Soft drink growth rates are ahead of inflation, suggesting that industry profitability will continue through the mid-1990s. The diet drink business is doing even better—10 percent increases are expected this year. *NutraSweet's* expiring patent will drive diet drink prices down, probably increasing sales in the process.

The picture is not as bright for alcoholic beverages. In 1990, this segment of the industry totalled $23.1 billion in sales. So far in 1991, consumer spending on alcoholic beverages is down, due to the combined effects of Federal excise taxes and moderation messages. Production in 1991 has also dropped considerably. But this industry's future may flourish overseas—alcoholic beverage exports rose 19 percent in 1990, with Japan emerging as a major customer.

STATE
OF THE
FOOD INDUSTRY

DAIRY PRODUCTS

Sugar-free chocolate milk sweetened with *NutraSweet* was introduced in 1990. (Source: Wisconsin Milk Marketing Board.)

Except for the cheese segment, fat is the major factor impacting the dairy industry. In both constant-dollar shipments and per-capita consumption, whole milk continues to slide as lowfat milk, skim milk and yogurt gain. Butter continues its long-term decline in favor of margarine and blends. Ice-cream consumption dipped 0.6 percent last year as frozen-yogurt soared 45.4 percent.

Sparked by Italian types, however, per-capita consumption of natural cheese grew 9.1 percent in 1990, with Mozzarella alone gaining 12.3 percent due to the popularity of pizza, and cream cheese 15 percent because of the bagel boom. Processed cheese consumption declined 3.7 percent.

According to *U.S. Industrial Outlook 1991* (Department of Commerce), dairy-product shipments totaled $48.5 billion in 1990, reflecting no change from '89 when adjusted for inflation. Milk prices rose for the second consecutive year, reducing Commodity Credit Corp. purchases by 22 percent and pushing government inventories up only 1.2 percent.

However, according to USDA, that situation changed rapidly as milk prices plunged late last year to lose $3 per cwt. by the first quarter of '91 as compared to last year's first quarter, forcing CCC to purchase 46.5 million lbs. of cheese, 142.2 million lbs. of nonfat dry milk and 197.6 million lbs. of butter during the first quarter of this year.

According to an October, 1990 study by FIND/SVP (New York City), sales of ice cream and frozen desserts reached $9.4 billion in 1990, up 3.5 percent from '89. Ice cream accounted for 55 percent of category sales ($5.2 billion) but has slid marginally since 1986, while frozen yogurt soared to 23 percent of sales ($2.2 billion) at a compound annual rate of 26 percent since '86. Ice milk accounted for 12 percent of sales ($1.1 billion), growing 7 percent per year since '86. FDA is reviewing proposed new standards of identity for ice cream and may also soon define "frozen yogurt."

Dairy outlook: constant-dollar shipments will decline 1.5 percent in 1991, says Commerce. Milk prices may fall but increased energy costs will boost costs. Collective per-capita consumption of lowfat milk, skim milk and yogurt will rise 2.7 percent; per-capita consumption of cheese will level off, but Italian varieties could gain 3.8 percent.

FIND/SVP sees sales of ice cream (as currently defined) falling 6.4 percent per year to $4 billion by 1994, with redefined ice milk growing by 22 percent per year to $2.5 billion and frozen yogurt by 14 percent per year to $3.7 billion by '94.

Per Capita Consumption of Dairy Products (lbs. or gal. per person)

Fluid	1988	1989	1990[1]	1991[2]
Milk (lbs.)				
Whole milk	115.2	113.6	112.0	110.4
Lowfat milk	91.4	93.9	96.5	99.1
Skim milk	11.2	11.5	11.8	12.0
Yogurt	–	3.7	4.5	4.7
Cottage Cheese	3.8	3.5	3.4	3.2
Cheese (lbs.)				
Natural	21.7	22.6	24.3	24.3
Processed	8.4	8.1	7.8	7.6
Butter (lbs.)	3.2	2.7	2.6	2.6
Nonfat dry milk (lbs.)	2.4	3.2	3.4	3.0
Evaporated milk (lbs.)	2.1	1.7	1.6	1.6
Ice cream & frozen desserts (gal.)				
Ice cream	3.6	3.4	3.3	3.2
Ice milk	1.4	1.5	1.5	1.5
Frozen yogurt (mfg.)	–	1.3	1.8	2.3
Frozen yogurt (mix)	–	0.2	0.3	0.5
Water ices	0.2	0.2	0.2	0.2
Other frozen desserts	0.2	[illegible]	0.2	0.2

[1] Estimate.
[2] Forecast.

Source: USDA; U.S. Department of Commerce.

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JULY 1991

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READ IT & WIN
AD CONTEST

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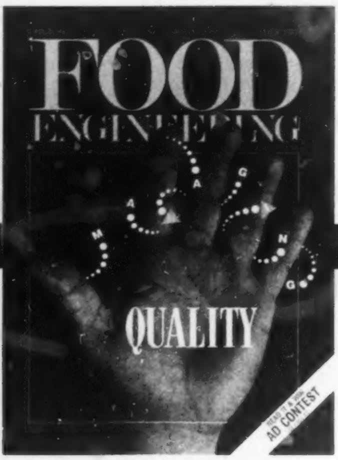

ABOUT THE COVER

Despite major advances in automation, quality management, at its core, remains in the hands of people. In progressive companies, all hands participate in quality management, not just those in the QC department.
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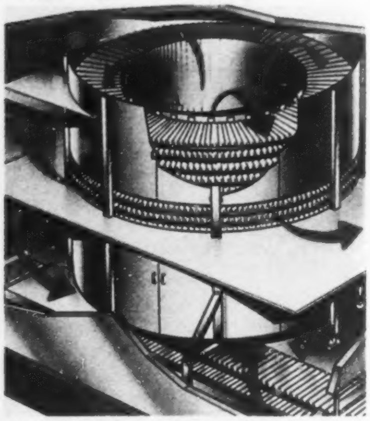

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The conference focused on issues facing the laboratory of today and tomorrow, including computerization, the "fast-factory," globalization and food safety.

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Long spurned for its fat and salt content, processed meat is coming into its own as a light and healthy food.

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It's up to the scientists to develop methods that reduce sample preparation time and simplify procedures.

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Women's changing aspirations mandate different marketing messages and new promise from foods.

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Food Plants '91, the annual meeting of food plant engineering and manufacturing business, will explore whether to renovate old plants or build new ones.

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Unilever subsidiary Van den Berghs & Jurgens has integrated scheduling with planning, materials management and production reporting.

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JESSE H. NEAL
AWARD-WINNING
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The tray is now in the marketplace being used by a "major food processor" and has undergone extensive organoleptic testing. Therma-Plate is considering further applications for the tray such as shelf stable entrees (it has been tested during retorting) and chilled entrees.

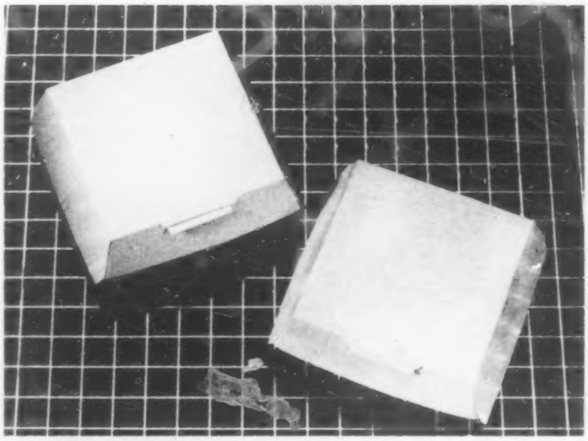
See additional highlights of the show on this page and the next.

Therma-Plate Corporation, 126 Corporate Boulevard, South Plainfield, NJ 07080 or circle 251. ▲

Package protector meets source reduction goals

The 3M Company showcased its line of *Scotchban Protector* products at Pack Alimentaire '91. Scotchban Protector, a barrier that protects the appearance of a package, is not a film or coating, according to the company, but a treatment on individual paper fibers that does not seal the paper pores.

Scotchban Protector is a fluorochemical and not a CFC. It does not affect the ozone layer and complies with FDA regulations for direct food contact. By using this protective layer on paper and paperboard as an alternative to polystyrene, film or foil laminates, manufacturers can substantially reduce the bulk and cost of packaging substrates.



▲ A new Scotchban Protector now offers packagers protection against grease, oil, and water with no affect on recyclability. (Source: 3M Company.)

The company's *FC-807* product protects packages against grease and oil. A new product, *FX-845*, introduced at the show, protects packages against grease, oil, and water and can help companies meet their source reduction goals since the protective layers do not interfere with the recyclability or degradability of paper or paperboard. Applications for the Scotchban Protector include cookies, crackers, popcorn, and other varieties of snack food.

3M Company, Building 301-1E-03, 3M Center, St. Paul, MN 55144-1000
Circle 252

Industry gets its turn to talk

At Pack Alimentaire '91, Stewart Mosberg, senior director of client service at Walter Dorwin Teague Associates, Inc., released the results of a survey which indicated how industry continues to respond to the American consumer's concern for the environment. Conducted by the Gallup Organization at the end of 1990, (another study had been completed in 1989), the firm interviewed a random sample of 100 managers of Fortune 500 companies who are responsible for packaging consumer products; 13 percent of the companies were from food and related industries.

The majority of respondents to the survey reported that they had either introduced or planned to introduce environmentally-friendly packaging of the products under their control. Besides helping the environment, the most common reasons for introducing "green" packaging were consumer and legislative pressure. Although cost was seen as the major deterrent for using environmentally-friendly packaging, most respondents felt that the

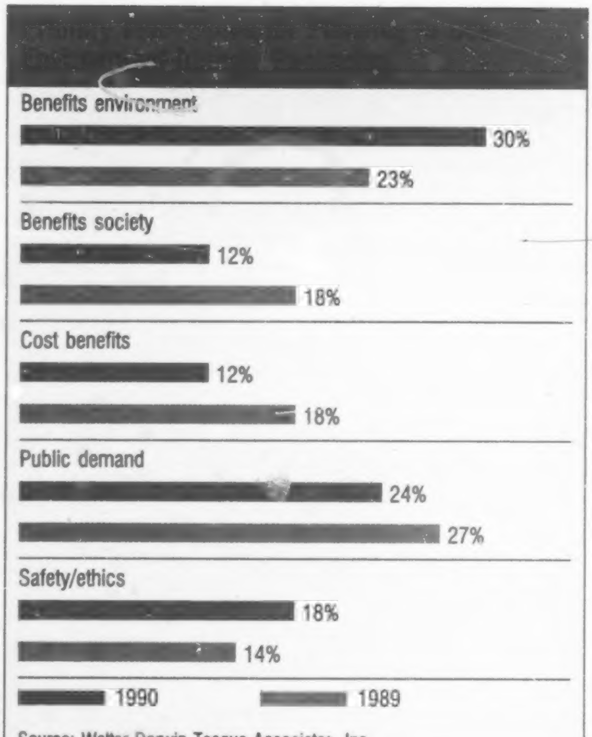
[illegible]

Orics Industries introduced a line of vacuum gas flush sealing machines at the recent Pack Alimentaire expo, the *SLS-VGF* series. The machines provide controlled sealing solutions for modified atmosphere packaging (MAP). The machines' advanced control systems and floating heat-sealing heads provide an excellent seal even on a difficult sealing medium such as a CPET preformed tray.

The fully automatic models are equipped with a microprocessor controller and an optical cam switching device. Less than one percent oxygen residual inside the package can be consistently achieved. Each heat seal head in this series is equipped with a resistance temperature detector.

Orics Industries Inc., P.O. Box 6807, Flushing, NY 11365
Circle 259

▲



Source: Walter Dorwin Teague Associates, Inc.

▲ Public demand and helping the environment are the two major reasons manufacturers will continue to introduce green packaging.

consumer would be willing to pay the extra cost involved.

The poll also indicated that the American public's increasing interest in enhancing and preserving the environment continues to significantly impact the manufacturing and packaging industries, and is, without question, influencing the use of environmentally-friendly packaging.

Walter Dorwin Teague Associates, Inc., 95 Madison Avenue, New York, NY 10157 **Circle 253**

On-line detection system for MAP

Designed to eliminate defective modified atmosphere packages online, a new method of detection was introduced at Pack Alimentaire '91 by Liquid Air Corporation. The fully-automated system is an accurate method to ensure leak-free products and can detect leaks as small as 2.5 microns in diameter, the normal size of bacteria.

In order for the system to work, a small gaseous headspace is required, usually one that is one percent of the total volume of the package. In a carbon dioxide/nitrogen mix, the nitrogen is replaced with a small portion of helium as a tracer gas in very low proportions. The helium is detected through a sensor which indicates if there is a leak in the container or the lidding material. The system can achieve line speeds of 30 to 45 packages per minute.

The equipment for the detection system can be leased; the company owns the patent and can supply gas mixtures with helium to use with it.

Liquid Air Corporation, 2121 North California Boulevard, Suite 350, Walnut Creek, CA 94596
Circle 255

Trays slated for retort or shelf stable use

Thermoformed from a unique rollstock composed of polyester and nylon, MCP Performance Plastics' *CPET-Barrier* trays were showcased at Pack Alimentaire. The trays have high heat resistance and a high oxygen barrier property providing a long shelf life (six to 12 months). The trays are dual ovenable, recyclable, and are ideal for retort and shelf stable applications.

MCP Performance Plastics, P.O. Box 542, Janesville, WI 53547
Circle 260

[illegible]

A new grade of *Valox* resin was exhibited by GE Plastics at Pack Alimentaire that is currently being used by Alma S.A., a Swiss packaging company, for use on its new *P'tit Louis* one-portion soft cheese pack.

***Valox FKG 1530* resin is a semi-crystalline engineering thermoplastic developed for direct coextrusion with high impact polystyrene (HIPS) without a tie layer. While the HIPS layer provides strength and easy thermoforming, Valox resin withstands 400°F heat sealing temperatures and is unaffected by oils and dairy fats.**

The package provides a cost effective alternative to portion cups with aluminum lidding which Switzerland considers harmful to the environment. Alma thermoforms and seals the pack, leaving the neck open for the hot filling process. When the cheese cools, the neck is sealed. The easy-to-open pack shows good peelability and tear resistance.

GE Plastics, PR #39-91, One Plastics Avenue, Pittsfield, MA 01201 **Circle 258**

▲

CHILTON'S

AUGUST 1991

FOOD ENGINEERING

SINCE 1928, THE SOURCE ON PROCESSING, PACKAGING, AND PRODUCT DEVELOPMENT

NEW FORMULATION CHALLENGES

FOOD ENGINEERING

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The ultimate challenge of new food formulation is pleasing the customer. But increasingly, in these days of complicated ingredient systems, this means understanding the food matrix down to the molecular level.
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The emphasis of this year's IFT Food Expo was on ingredients for healthy, low-fat foods.

22 Encapsulation Spurs New Products

At IFT, encapsulation and microencapsulation technologies were demonstrated and new microencapsulated ingredients introduced.

24 Marketplace—Lunch Microwavables

Companies marketing microwavable entries are introducing meals aimed at the lunchtime crowd.

26 New Starch-based Fat Replacer

A.E. Staley announced a starch-based fat substitute capable of replacing up to 100 percent of some fats.

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New individually packaged cereal bowls are a considerable improvement over the traditional square box.

46 Beverage Carrier Offers Many Benefits

Containers packaged with new system are more sanitary because polyester completely covers each can top.

46 Study Cites Growth of CAP/MAP

Shipments of materials, gases, and equipment for the controlled atmosphere/modified atmosphere/vacuum packaging market totaled $1.1 billion in 1990.

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Grupo Prolesa, a Mexican producer of dairy products and beverages, has found a way to convert whey permeate to profit: Use it as the source of a lactose sweetener.

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INDUSTRY REPORT

U.S. firms go Japanese

While many U.S. executives believe it impossible to succeed in Japan, a growing number of U.S. companies are prospering there, according to a study conducted for the American Chamber of Commerce in Japan (ACCJ) by A.T. Kearney, Inc., a Chicago-based global management consulting firm.

Just over half of those surveyed said Japan fosters a favorable climate for investment, with close to 60 percent saying their trade with Japan has more than doubled since 1985.

The study maintains that the primary barrier to entry to Japanese markets "is the residual effect of more than 40 years of Japanese trade protectionism, sanctioned and encouraged by both the U.S. and Japanese governments." Japanese-caused obstacles to trade identified, included: high costs of doing business in Japan; difficulty in locating and hiring qualified personnel; multi-tiered distribution systems; and ministry policies.

U.S.-based impediments to trade included: short-term management driven by need to report quarterly improvements in operating profits; inability or unwillingness to modify products to suit the Japanese market and quality standards.

U.S. Firms Describe Trade Climate with Japan (since 1985)

Say restrictions hinder trade	11%
Increased investments	67%
Expect increases in investments to continue	63%

(Source: A.T. Kearney, Inc.)

U.S. companies can succeed in Japan, according to a poll. (Source: A.T. Kearney.)

FDA releases juice label requirements

The Food and Drug Administration (FDA) proposal for juice labeling came under fire from the National Food Processors Association (NFPA). A provision requiring labeling of the each juice's percentage would bar the blending of juices to achieve final flavor qualities, said the NFPA.

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process control.

New encapsulated ingredients:

- Chr. Hansen's Laboratory introduced "Micro-Cap Colors"—concentrated turmeric oleoresin, paprika oleoresin and annato extract microencapsulated in a dustless free-flowing carbohydrate rather than an oil for quick dispersion in water without emulsifiers. Applications include powdered custards, dips, dressings, jellies, soft drinks and soups.
- DanoChemo A/S featured free-flowing, non-dusting, cold-water soluble microencapsulated herb extracts including dill, parsley, marjoram, celery and lovage for flavoring powdered soups, sauces and dressings. The firm also produces *Dry n-3* microencapsulated fish oils and Omega-3 fatty acid.
- Morton International unveiled a prototype salt encapsulated in partially-hydrogenated cottonseed and soybean oils for delayed release into food formulations. Balchem Corp. also featured encapsulated salt, as used in the lean-beef patty developed by Auburn University and marketed by McDonald's.
- Banner Gelatin Products spotlighted gelatin as a natural, edible, microwaveable, bland-testing, colorable and biodegradable encapsulation material that helps protect ingredients from

MARKETPLACE

Microwaveables take aim at the lunch crowd

Microwaveable entrees are excusing themselves from the dinner table to instead present themselves as a quick, nutritious lunch to office workers who are looking to prepare and eat within a half hour.

Approximately 48 percent of day workers bring their lunch to work at least once a week, according to a Gallup Poll conducted for the National Restaurant Association (NRA). That comes to more than eight million people, according to Joanne Bethlahmy, product manager and originator of Golden Grain Co.'s *Rice-A-Roni, Lunch for One* single-serve microwaveable meals and boxed pasta dishes.

Varieties include Pasta Broccoli Au Gratin, Fettuccine Alfredo, Pasta & Three Cheeses, Macaroni & Cheese and Shells & Creamy Sauce—all cook in the microwave for five minutes or less. Each of the ten ounce servings contains 350 calories or less. Preparation consists of adding hot water and microwaving.

A nine-woman team (representing research and development, quality assurance, engineering, and sales and marketing) developed Lunch-for-One specifically for career women. The company's research found that 65 percent of female office workers spend only a half hour for lunch and typically eat at their desk. Then they spend the rest of their lunch hour running errands or catching up on heavy workloads.

Office Workers Who...	
Bring lunch to work	48%
Have access to microwave oven	70%
Watch diet	40%

(Source: NRA.)

▲ A window of opportunity exists with the office lunch crowd. (Source: NRA.)

"Our research indicated that women had the greatest need for more lunch choices that could be prepared quickly at work," explained Joanne Bethlahmy, product group manager and originator of the single-serve pasta concept.

Pillsbury has renamed its *Green Giant Garden Gourmet* vegetable side dishes to *Green Giant Garden Gourmet Right for Lunch* entrees. A company spokesperson said the change was made in response to confusion on the part of consumers as to what the product was and company research that found 50 percent of those polled would have the product for lunch. The vegetable with sauce or pasta line includes: Tortellini Provencale, Asparagus Pilaf, Rotini Cheddar, Fettuccine Primavera, Pasta Dijon, Pasta Florentine and Creamy Mushroom. The 9.5 ounce serving contains less than 250 calories.

Finally, if you're still hungry and there's enough time, office workers can pop a cake into the microwave oven with General Mills, Inc.'s *Betty Crocker MicroRave Singles* which contains cake mix and pan with ready-to-spread frosting.

While Pillsbury's and General Mills' products are not necessarily new, their positioning toward harried office workers with access to microwave ovens is and will probably be followed by more introductions as this category takes off.

CHILTON'S SEPTEMBER 1991

FOOD ENGINEERING

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FOOD ENGINEERING

ABOUT THE COVER

As the result of an industry-wide competition, the General Mills, Covington, GA facility has been selected New Plant of the Year. The award will be presented by FE at the Food Plants '91 conference in October.

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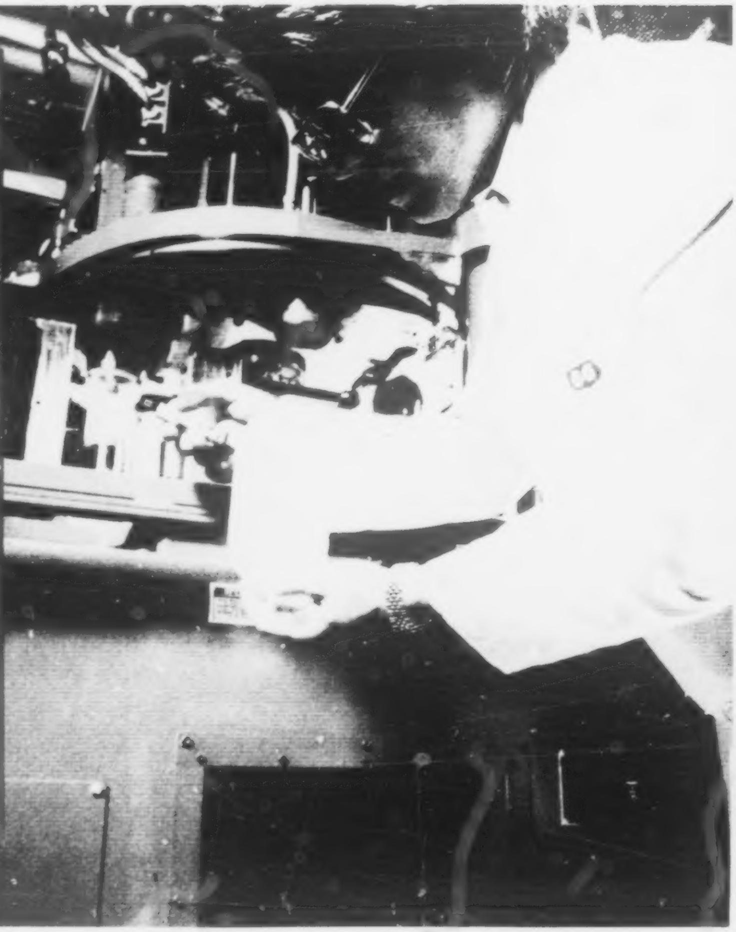
PACKAGING PLASTICS:

STILL EXCITING, STILL GROWING



A new grade of Marlex polypropylene, BP571, from Phillips 66 has a 10 percent increase in clarity over similar materials. (Source: Phillips 66 Company.)

The use of plastics for food packaging continues to grow as it provides the convenience demanded by today's consumers.

MARGIE J. RUSSELL
TECHNICAL EDITOR

Like many lines uttered in movies, it became a classic. Ever since the guy in the movie *The Graduate* told Dustin Hoffman the entire world's future would become engrossed in "plastics," this wonder material took off in popularity and uses in record numbers. And indeed, for the food packaging industry, this observation has proven to be prophetic. The future, despite mounting environmental pressures, continues to be plastics because, quite simply, they have provided more excitement, more technological challenges, and more diversity than any other material used in the packaging sector.

Microwaveability, portability, light weight, shatter resistance, and ease-of-use are only a few of the benefits plastics have brought to a nation of whimsical consumers over the past decade. But how important are plastics to food packaging *now*? "Very important," says Dave Gosper, vice president, general manager-North

PACKAGING ANALYSIS: PLASTICS

American Films, Mobil Chemical Company, Pittsfield, NY, "because they provide the most vital benefit of all—convenience. There is no question that plastic is the most efficient way to provide convenience and at the same time protect the product."

Developments and markets

Currently, there are several exciting areas in plastics developments for the food industry, the foremost being improvements in barrier properties in many substrates used for food packaging. A top priority for resin companies, film suppliers, and down-the-line converters is to make their plastic materials less permeable to water and oxygen. Their customers want to maintain the shelf life of their products and keep those products in the same condition as the day they were manufactured and packaged.

There is development work going on which is attempting to combine barrier polymers and newer scavenger technologies, thus ensuring even longer shelf lives for certain products. Predictions indicate that a faster penetration of plastics into the food segment will occur when these material combinations are perfected.

Improvements in physical properties and clarity are continuously being worked on as well, which will allow downgauging, leading to more cost effective packages. Clarity will provide additional opportunities for conversion. Improvements in overall process control for converting and extrusion equipment will also provide additional efficiencies.

Another developing area in the plastics sector is the expansion of the use of polyesters beyond the beverage market. Polyesters had been used in some other markets a few years ago with minimal success but now with improvements and further development, they will be used in a number of new applications such as hot fill.

So, where are all these developments headed? Are the markets for plastics still growing? "Right now, I believe the strongest growth area in plastics for food packaging is flexible packaging," said Ronald H. Foster, technical development manager, EVAL Company of America, Lisle, IL. "This is especially true in multilayer packaging. The foodservice area in particular appears to be very receptive to change from traditional forms of packaging. The desire for more natural foods has increased the demand for more flavor and aroma barrier packaging."

The overall market for multilayer barrier packages in food applications is still growing. The industry is currently not seeing the 20-plus percent growth that was seen in the late 1980s, but the market is experiencing a 10-12 percent growth which is expected to continue through 1995.

The total flexible packaging market in North America for oriented polypropylene (OPP) is placed at 500 million pounds, according to Mobil Chemical Company. The OPP segment is seeing seven to eight percent growth per year. And within the OPP segment, snack applications head the list at six percent, followed by cookie applications (3-4 percent), confections (3 percent), and bakery (2-3 percent). The OPP market is growing faster than the total market for flexible packaging because of the market's continued efforts in paper replacement, material improvements, and aluminum foil replacement. And the flexible segment may be a trendsetter, too, as plastic-to-plastic conversions might occur here. Manufacturers may go from rigid to flexible as a prime example of source reduction for some of their products.

Unfortunately, there are not many "truly new" markets left in food packaging, so it is more of a necessity to have a cooperative effort among the food processor, the raw material supplier and the converter in order to bring new products to the market.

One product new to the arena is currently in test market in Kansas City, MO, a line of cheese sauce dips from Frito Lay. The microwaveable dips are packaged in thermoformed hot fill tubs using Du Pont Company's *Selar OH MFE* ethylene vinyl alcohol

MICROWAVABLE
Mild Cheddar
MICROWAVABLE
Jalapeño & Cheddar
MICROWAVABLE
Nacho Cheese

A new hot fill tub using Du Pont's Selar OH MFE barrier resin is currently in test market in Kansas City, MO. (Source: Du Pont Company.)

FDA's perspective of regulations for food packaging

A substance is a food additive, as mandated by the U.S. Food, Drug, and Cosmetic Act, if its intended use "results or may reasonably be expected to result, directly or indirectly, in its becoming a component or otherwise affecting the characteristics of any food." Food packaging materials are considered indirect food additives and are subject to regulation.

The permitted conditions of use for the additive, which are stipulated in the U.S. Code of Federal Regulations, may include temperature, types of food, use level in the plastic, and whether the food contact will be one-time or repeated. Each of these parameters affects the level of migration and the potential human exposure to the additive. By stipulating the permitted use conditions, the regulation is prescribing the level of exposure to the additive which has been determined to be safe.

We must now examine a significant principle inherent in the regulations for indirect food additives when considering the use of recycled materials in packaging. These regulations assume that food packaging materials are made from a controlled source. There is a regulation in 21 CFR Part 176 which covers paper and paperboard which addresses the use of other than virgin materials in the manufacture of paper food contact articles. The regulation provides for the use of both industrial waste from the manufacture of paper and paperboard as well as salvage from used materials provided that neither "bears or contains any poisonous or deleterious substance which is retained in the recovered pulp and that migrates to the food..." However, Part 177, which covers polymeric materials, has no comparable regulation.

The fact that the regulations for food contact plastics do not include any specific authorization for the use of recycled materials should not be interpreted to mean that FDA intends to prohibit their use. The explanation for the absence of a regulation addressing this matter is two-fold: 1) FDA did not anticipate this technology when the regulations in Part 177 were being written, and 2) no one petitioned the Agency to establish such a regulation.

While FDA does not intend to prohibit recycled material for use in food-contact applications, the Agency has the same responsibility vis-a-vis this technology as it does with any other: to ensure the safety of the U.S. food supply. FDA intends to publish regulations that will establish the requirements for the use of recycled plastics in contact with food and develop protocols for industry to use in order to demonstrate that a particular recycled material is of suitable purity for food-contact use.

The agency's protocol will call for model contamination studies with a representative group of contaminants of different polarities, volatilities and permeabilities to the polymer. The aim of the studies will be to demonstrate that the recycling process is capable of removing all but insignificant levels of the matrix of model contaminants.

As a general rule, the level of contamination of recycled material which will be considered to be insignificant will be that which corresponds to a dietary exposure no greater than 0.5 to 1.0 ppb. Because the definition of insignificant will be given in terms of dietary exposure, one considers both migration levels and the fraction of the diet packaged in that particular material (the so-called consumption factor). Consequently, for materials like polyolefins, the maximum acceptable contaminant residue level in the recycled polymer will be lower than that for materials like PET or PVC which have lower consumption factors.

Condensed from a talk by Dr. Patricia S. Schwartz, Division of Food Chemistry and Technology, Food and Drug Administration, Washington, DC, presented at FoodPlas '91, Orlando, FL.

(EVOH) barrier resin. The seven-layer shelf stable tubs are manufactured by Rampart Packaging (Williamsburg, VA) and consist of polypropylene as the structural material. The Selar OH resin provides a high oxygen barrier ensuring product freshness.

A significant development in the flexible sector is a high barrier polyvinylidene chloride (PVDC) coated OPP film from Mobil Chemical Company, *70 HBS*. This entry, whose main application is found in the snack food arena, consists of a PVDC coating on a layer of biaxially oriented polypropylene (BOPP) and a broad heat seal range layer. The film provides excellent moisture and oxygen barrier and can be lap sealed without a thermal stripe to coextruded polypropylene film. The film's properties have been quite advantageous to The Bachman Company, a snack food manufacturer in Reading, PA, which has seen waste reduction and improved productivity on its lines by using the film.

Currently only available in developmental quantities is Phillips 66's new *Marlex BP571* polypropylene, a clarified 25-melt flow homopolymer

	1988	1989	1990E
Gross national product ($ in trillions)	$4.9	$5.2	$5.5
Percent packaging	1.6	1.6	1.6
Packaging ($ in billions)	$77.5	$84.0	$89.0
Percent glass	5.7	5.4	5.3
Percent metal	13.7	13.3	13.7
Percent plastic	4.0	4.4	4.2
Glass containers:			
Volume (million gross)	280.6	284.0	286.8
Value ($ in billions)	$4.4	$4.5	$4.7
Metal containers:			
Volume (billion cans)	114.1	120.0	126.3
Value ($ in billions)	$10.6	$11.2	$12.2
Plastic containers:			
Volume (billion units)	34.5	35.7	38.2
Value ($ in billions)	$3.1	$3.7	$3.7

Source: Prescott, Ball & Turben and Packaging Strategies, Inc.

Bachman
Jax
Bachman
AIR POPPED
PopCorn

The Bachman Company now uses a one side heat sealable, polyvinylidene chloride coated OPP for packaging several of its snack products. (Source: Mobil Chemical Company.)

which could eventually replace glass in some applications. The material was designed for use in injection-stretch blow molded food containers such as jars for salsa, dry foods, peanut butter, and juices. Transparent containers can also be made with less material using BP571, which has a melt temperature of 390°F to 427°F. And according to the company, the material has a faster cycle time than traditional polypropylene.

Despite all the wondrous achievements plastics have given to the packaging industry over the years, they are, unfortunately, not without some problems. During the 1980s, a number of special interest groups and legislative bodies decided that plastics were the primary cause of the solid waste disposal problem in the U.S. and began a campaign to restrict or ban their use in many areas. In particular, multilayer and flexible packages have been targeted as being the worst culprits in the disposal system.

It has been said that the best defense is a good offense, which the packaging industry is now using in pointing out the advantages of plastics packaging. However, as some analysts suggest, a return to monolayer struc-

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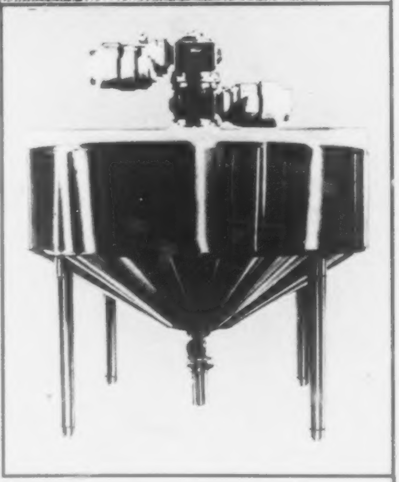

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tures is not the solution. "I do not believe that monolayer containers are the answer to recycling and waste problems," said EVALCA's Ron Foster. "A lot of work has been done to show the recyclability of multilayer, multimaterial plastic packages. Until collection systems and end use markets for recycled materials are developed, the recycling of plastic packages will not increase."

The current dilemma for the industry now is the issue of using recycled materials in food packages. The FDA requires that all materials in contact with a food product be "pure" and the agency is working with the industry to develop guidelines. (See box story.)

Scott Fritschel is the Environmental Programs manager with Du Pont Company in Wilmington, DE and believes "we will see recycled materials in food packaging in the future but we must keep the market segmented."

He goes on to explain that recycled materials will probably not be able to be used in retort plastic containers but could be more readily used for a container for dried products such as rice, which is usually washed before cooking. "We must also consider chemical recycling," he adds, "which is the breakdown of polymers into their component parts. The methanolysis method being developed by several suppliers for polyester will open this door further and we may then be able to use polymers as a renewable resource when the process gets perfected."

Although 20 years ago plastics were viewed as a somewhat "novel" material for food packaging, they are considered the norm now for most products. Since they provide the ability to tailor a package for specific requirements, they are still the best material to respond to these requirements. This is partly why plastics for food packaging has not peaked: their properties continue to evolve and have become vital to many package structures. Their growth will be driven by the developments of manufacturers and the requests by consumers for more convenience and variety. ▲

Circle 61 or see FEM, p. 93

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OCTOBER 1991

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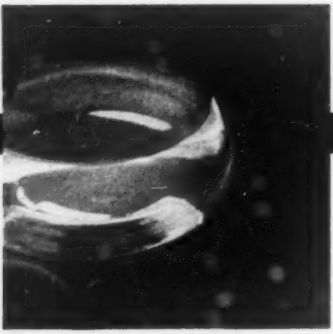

ABOUT THE COVER

Increasingly, a food company's mission is being crafted by its laboratory. But tomorrow's top laboratories will be distinguished more by the quality and innovation of their management than by the size of their bankroll.
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While rice bran's health benefits are widely recognized, studies show that rice bran oil delivers benefits as well.

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At one time it was difficult to make quality confectionery coatings without tropical oils; but times have changed.

32 Marketplace—Exotic Snacks
The snack world may never be the same as exotic varieties of old standbys make their debut.

37 No Muss, No Fuss Analysis
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INDUSTRY REPORT

Beat the clock but crown the customer

Be the first in your office to throw around the latest in management acronyms: TCM (Time Compression Management). TCM is Chicago-based Andersen Consulting's concept to speed up business cycles and allow its users to be better positioned to meet their customer needs faster than the competition. Or more simply: ***time is the enemy and the customer is king.***

Three Principles of TCM

1. Put the customer first.
2. Make all decisions based on their impact on the company as a whole.
3. Eliminate all non-value-added activities.

(Source: Andersen Consulting's Application Products—America.)

The goals of TCM are: one, to minimize the time between production and customers' actual buying decisions; two, to view all decisions as part of a larger program, namely to increase product quality and increase its speed-to-market; three, to move beyond simply trying to eliminate redundant shop floor tasks and wasteful distribution practices to cut out all activities that do not contribute to product value.

"The overall goal is to reduce the initial planning-to-delivery cycle to the absolute minimum. TCM should complement and be a part of a company's overall commitment to TQM. Quality is the customer's number one concern and it is the number one principle and goal behind TCM," said William Darnton, managing partner of Andersen Consulting's Application Products—America. "TCM is a leap beyond just-in-time manufacturing (JIT) or electronic data interchange (EDI)."

...KGF—Canada does TCM

Andersen advised Kraft General Foods—Canada (KGFC) as to how to implement TCM in conjunction with Just in Time (JIT) and Statistical Process Control (SPC) to simplify overall material flow and material handling, increase product line flexibility and improve process yield.

The results? ***KGFC consistently gets a 50 to 75 percent improvement*** *in throughput from existing manufacturing processes. This change was a result of reducing material handling by 50 to 60 percent and process loss by 25 to 30 percent. Further, this has resulted in a 50 percent reduction in the required finished goods inventory. Also, lower inventories mean less of a need to destroy expired product.*

Sales drop while profitability increases

While food sales rose in 1990 by 5.5 percent over 1989 to $731 billion, adjusting for price increases, real sales actually declined by 0.9 percent, according to the U.S. Department of Agriculture's Economic Research Service's (ERS) Food Marketing System in 1990 *report.*

However, while retail prices have gone up, food manufacturers and retailers have managed to make a profit through controlling costs and streamlining operations, the report added. The total U.S. food system (processors and foodservice operations) purchased an estimated $108 billion in U.S. agricultural commodities, $21 billion in foreign agricultural commodities and $9 billion in seafood products in 1990.

	1987	1988	1989	1990
Dairy processors	22	19	14	16
Food processors	110	136	107	66
Poultry processors	10	7	5	10
Seafood processors	2	5	4	4
Snack food processors	3	12	6	5
Soft drink bottlers	24	18	12	12

Source: USDA Economic Research Service.

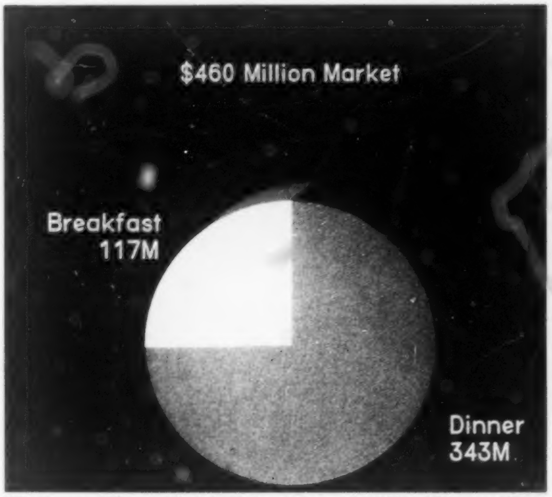
The "system" then ***added an estimated $505 billion in value*** *to these raw products. And for the second consecutive year, merger activity slowed, with the value of mergers in 1990 reaching $9 billion, down from 1989's $14 billion. Last year's decline is no surprise since the major source of financing—junk bonds—dried up in 1990, according to the report. As the chart above shows, the numbers of mergers in the food industry has decreased since the junk bond era of the eighties has concluded.*

Microwavable sandwich market sizzles

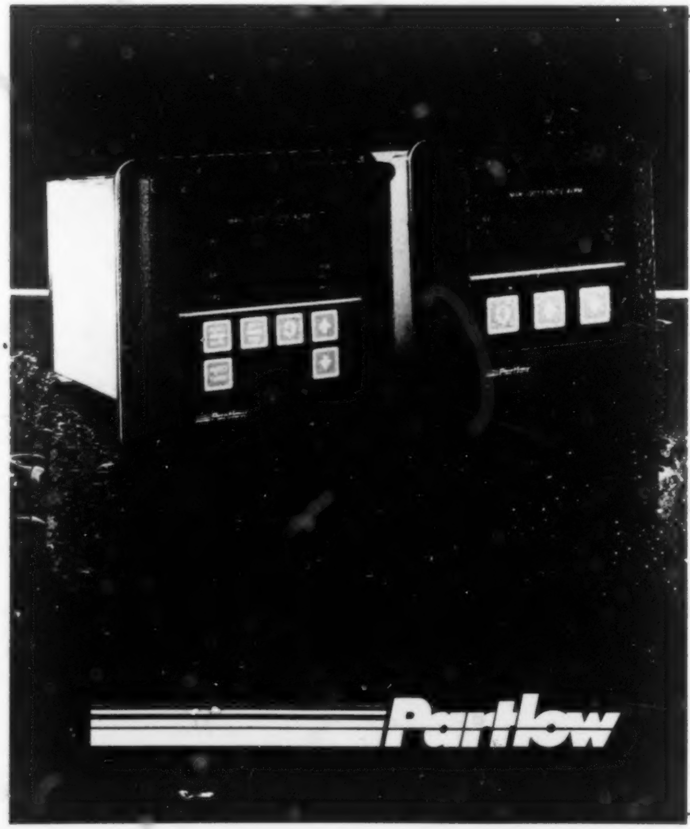
The $460 million microwavable sandwich market is heating up as fast as the products themselves, according to FIND/SVP, New York. However, there are still lingering questions as to who the products should be positioned for, according to Peter Allen, FIND/SVP's vice president, Market Research Reports.

Historically, there has been two segments in the market: breakfast (any sandwich with eggs or sausage) and dinner sandwiches (pita sandwiches, burgers, ham and cheese sandwiches).

Total retail **sales of dinner sandwiches should climb to $603 million by 1995,** for compound annual growth of 11.9 percent, according to FIND/SVP. Total retail sales of frozen breakfast sandwiches are forecast to reach $138 million by 1995, for compound annual growth of 3.4 percent.



Microwavable sandwich sales heat-up while still searching for a niche. (Source: FIND/SVP.)



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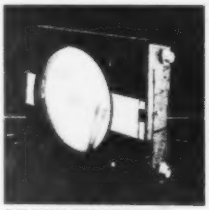

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